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„The impact of coercive power on cooperation in social dilemmas“

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Preface

The present cumulative dissertation “The impact of coercive power on cooperation in social dilemmas” is based on already published and submitted articles and book chapters. In the following, eight publications, which serve as main publications for the dissertation, are embedded in the theory of social dilemma, presented in a brief overview and serve as a basis for the overall discussion. In the following overview the main publications are summarized regarding their findings on the impact of coercive power on cooperation in social dilemma situations. A secondary goal of the dissertation was to make an additional contribution to research on economic psychology. Therefore, five additional publications (one article, and four lexicon entries) are included in the dissertation, but will not be discussed in detail.

Main publications

Kirchler, E., **Hartl, B.**, & Gangl, K. (in press). Income tax compliance – In M. Altman (Ed.). *Behavioral Economics With Smart People*. Cheltenham, England: Edward Elgar.

Hartl, B., Hofmann, E., Gangl, K., Hartner-Tiefenthaler, M., & Kirchler, E. (2015). Does the sole description of a tax authority affect tax evasion? - The Impact of Described Coercive and Legitimate Power. *Plos One*, 10(4), e0123355. doi: 10.1371/journal.pone.0123355

Gangl, K., Hofmann, E., **Hartl, B.**, & Kirchler, E. (in press). Power of authorities and trust in authorities determine the interaction climate and tax compliance. In L. Oats & D. Salter (Eds.), *Taxation. In Memoriam Tim Vollans*.

Gangl, K., Hofmann, E., de Groot, M., Antonides, G., Goslinga, S., **Hartl, B.**, & Kirchler, E. (in press). Taxpayers' motivations relate to tax compliance: Evidence from two representative samples of Austrian and Dutch entrepreneurs. *Journal of Tax Administration*.

Hofmann, E., **Hartl, B.**, Gangl, K., Hartner-Tiefenthaler, M., & Kirchler, E. (submitted). The impact of organizations' coercive and legitimate power on trust, relational climates and motivations for cooperation.

Hartl, B., Hofmann, E., Olsen, J., & Kirchler, E. (submitted). Sanctions in real-life social dilemmas: Impact and intervening factors.

Hofmann, E., **Hartl, B.**, & Penz, E. (submitted). Car sharing – company service or community trust.

Hartl, B., Hofmann, E., & Kirchler, E. (revise & resubmit). Do we need rules for 'what's mine is yours'? Attitudes towards governance in collaborative consumption. *Journal of Business Research*.

Additional publications

Muehlbacher, S., **Hartl, B.**, & Kirchler, E. (2015). Mental accounting and tax compliance.

Experimental evidence for the effect of mental segregation of tax due and revenue on compliance. *Public Finance Review*. DOI:10.1177/1091142115602063.

Kirchler, E. & **Hartl, B.** (2013). Ökonomische Psychologie [Economic psychology]. In M. A.

Wirtz (Hrsg.), *Lexikon der Psychologie* (16. Aufl., S. 1121 und 17. Aufl., S. 1191, 2014). Bern: Huber.

Kirchler, E. & **Hartl, B.** (2013). Steuerpsychologie [Tax psychology]. In M. A. Wirtz (Hrsg.),

Lexikon der Psychologie (16. Aufl., S. 1490-1491 und 17. Aufl., S. 1598-1599, 2014). Bern: Huber.

Hartl, B. & Kirchler, E. (2014). Schattenwirtschaft [Shadow economy]. In M. A. Wirtz (Hrsg.),

Dorsch – Lexikon der Psychologie (17. Aufl., S. 1450-1451). Bern: Verlag Hans Huber.

Kirchler, E. & **Hartl, B.** (2015). Tax avoidance, tax evasion, and the shadow economy. In M.

Altman (Hrsg.), *Real-world decision making. An encyclopedia of behavioral economics* (S. 431-432). Santa Barbara, CA: Greenwood.

Danksagung

An dieser Stelle möchte ich mich bei allen bedanken, die mir unterstützend zur Seite standen, mir Zeit und Rat, ein offenes Ohr und aufmunternde Worte schenkten - meinem Betreuer, meinen Ko-AutorInnen, meinen KollegInnen, meinen FreundInnen, meiner Familie, meinem Lebensgefährten. Ihnen allen möchte ich meinen Dank aussprechen für ihre moralische und fachliche Begleitung und dafür, dass sie diese Arbeit möglich gemacht haben.

Summary

Many of the most challenging problems society face are, at their core, social dilemmas (e.g., environmental pollution, energy crises, public transportation or taxpaying), representing a situation in which the personal interest of an individual is opposed to the interest of the community. The implementation of sanctions exercised by other group members (peers) or by a regulating authority, which holds coercive power, is a widely used solution in order to overcome the problem of non-cooperation in social dilemmas. The vast majority of social dilemma research has been based on economic games and focused mainly on peer punishment, even though in modern societies, peer punishment by personally reprimanding non-cooperation is rare. While some specific social dilemma situations are well researched, the impact of an authority wielding coercive power on cooperation has mainly been neglected. To fill this gap, the present dissertation comprise eight publications that examine the impact of authorities' power on cooperation in different social dilemmas, starting from evidences in the context of taxpaying. The dissertation shows that coercive power does impact tax payments, leading to an enforced motivation to comply. Based on the results on tax compliance, the current dissertation demonstrates that the consequences of coercive power differ depending on the social dilemma situation. Results suggest that cooperation can be increased most effectively by specific social dilemma related factors, like social norms or evaluation of offense. Studies on social dilemma in consumer research show that coercive power is perceived to be low in collaborative consumption communities, but consumers' request for governance in such communities seems to be a relevant outcome for the market. The present dissertation transfers knowledge on authorities' coercive power gained from tax research to other social dilemma situations, thereby making a significant contribution to social dilemma research.

Summary in German

Viele gesellschaftliche Probleme, wie Umweltverschmutzung, Schwarzfahren und Steuerhinterziehung, stellen ein soziales Dilemma dar. Als soziales Dilemma wird eine Situation bezeichnet, in welcher individuelle Interessen Einzelner im Konflikt mit den kollektiven Interessen der Gruppe stehen. Eine mögliche Maßnahme um Kooperation zu gewährleisten, stellt die Bestrafung durch andere Gruppenmitglieder oder Bestrafung durch eine regulierende Autorität dar, die Macht besitzt. Der Fokus bisheriger Forschung lag auf der Möglichkeit der Bestrafung durch Gruppenmitglieder, obwohl viele gesellschaftliche Probleme ein soziales Dilemma, in dem es eine Autorität gibt (öffentliche Verkehrsmittel, öffentliches Fernsehen/Radio, Steuer, Müllentsorgung etc.). Ausgehend vom Steuerkontext wurde in der vorliegenden Dissertation in acht Publikationen untersucht, welchen Einfluss Bestrafungsmacht von Autoritäten auf Kooperation in sozialen Dilemmata nimmt. Dabei konnte gezeigt werden, dass Bestrafungsmacht zu erzwungener Compliance führt und in Folge dessen Steuerzahlungen beeinflusst. Der Vergleich verschiedener sozialer Dilemmata weist jedoch darauf hin, dass sich der Einfluss von Bestrafungsmacht auf Kooperation in den jeweiligen Situationen unterscheidet und dass Kooperation wesentlich von situationsspezifischen Merkmalen, wie beispielsweise der sozialen Norm oder der Bewertung des Delikts, beeinflusst wird. Im Konsumentenbereich zeigt sich, dass Bestrafungsmacht in Gruppen, die gemeinschaftlichen Konsum organisieren, als gering wahrgenommen wird, Konsumenten jedoch die Einführung von Sanktionsmaßnahmen unterstützen. Die vorliegende Dissertation greift erste Ergebnisse zu Macht von Autoritäten im Steuerkontext auf, um verschiedene soziale Dilemmata zu untersuchen und leistet somit einen wesentlichen Beitrag für die Forschung zu Kooperation in sozialen Dilemmata.

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Introduction

Most of the world's greatest challenges represent social dilemma situations, including environmental pollution, energy crises, public transportation, taxpaying, or overharvesting of the oceans (Van Lange, Joireman, Parks, & Van Dijk, 2013). A social dilemma represents a situation in which the personal interest of an individual is opposed to the interest of the community (Dawes, 1980). Cooperation is costly to the individual, but helps all other community members (Cubitt, Drouvelis, Gaechter, & Kabalin, 2011): When a public resource is provided, such as a public transport system, individuals are each better off when they make use of it, without contributing in return (Kollock, 1998). For the community it would be better if everyone pays the fee for the public transport, and therefore cooperates. If too many individuals in a community do not cooperate and ride free, the public good can no longer be provided and therefore all members of the community are worse off. Although social dilemma situations are manifold, all situations comprise the same problem, namely those of non-cooperation, which can have major financial and societal consequences for the society.

The question of how cooperation can be enhanced is a topic of a vast literature spread over all disciplines of social sciences (Eriksson, Garvill, & Nordlund, 2006). Sanctioning non-cooperative behavior is a frequently proposed solution to ensure cooperation, as due to sufficient costs for defection for the individual, cooperation will pay (Fehr & Falk, 2002). Sanctions for non-cooperation can either be exercised by other group members (peers) or by a regulating authority, which holds coercive power. The vast majority of social dilemma research has been based on peer punishment, although in modern societies, peer punishment by personally reprimanding non-cooperation is rare (Traulsen, Roehl, & Milinski, 2012). Most societies have implemented authorities wielding coercive power to punish non-cooperative individuals (Hilbe, Traulsen, Roehl, & Milinski, 2014), for instance, tax authorities auditing and fining tax evaders, insurance agencies trying to detect insurance fraud, and control mechanisms of public transport agencies preventing fare dodging. In laboratory experiments, participants often voluntarily implement sanctioning institutions (Kosfeld, Okada, & Riedl, 2009), maybe due to the perception that informal sanctions are less reliable than formal sanctions (Putterman, Tyran, & Kamei, 2011).

While some specific social dilemma situations are well researched (e.g., pro-environmental behavior, Bamberg & Möser, 2007; Chan, 1998; Cialdini, Reno, & Kallgren, 1990; or illegal file sharing, Cox, Collins, & Drinkwater, 2010; Cronan & Al-Rafee, 2008;

Svensson & Larsson, 2012), the impact of an authority wielding coercive power on cooperation has mainly been neglected. Tax compliance is one of the few research areas where the authority's power is considered as a key mechanism to enhance cooperation (Gangl et al., 2015; Kirchler, 2007; Kirchler, Hoelzl, & Wahl, 2008; Kogler et al., 2013).

The goal of this dissertation is to examine the impact of authorities' power on cooperation in different social dilemmas, starting from evidences in the context of taxpaying (for an overview see Table 1). The present dissertation transfers knowledge gained from studies on tax compliance using various methods (Publication 1-4) to other social dilemma situations (Publication 5-8), thereby comparing the impact of sanctions in different social dilemma situations (Publication 5 & 6) closing with consumer behavior by investigating the difference between collaborative consumption organized by a company (as an authority organizing consumption) and collaborative consumption within self-regulating communities (Publication 7 & 8). Consequently, this dissertation investigates (a) whether authorities' coercive power enhance cooperation, (b) whether individuals base their decisions to cooperate or not on beliefs about the authority's power rather than on economic key determinants, (c) whether the impact of authorities' coercive power on cooperation varies across different social dilemma situations and (d) examines the role of coercive power and sanctions in collaborative consumption settings.

Table 1. Overview of the main publications of the present dissertation

Publication	Aim	Method
(1) Kirchler, E., Hartl, B., & Gangl, K. (in press). Income Tax Compliance – In M. Altman (Ed.). <i>Behavioral Economics With Smart People</i> . Cheltenham, England: Edward Elgar.	Reviewing psychological tax behavior research and presenting taxpayer behavior as behavior in a social dilemma situation. Discussing current developments in the field and possible future research directions for tax behavior research.	Literature Review
(2) Hartl, B., Hofmann, E., Gangl, K., Hartner-Tiefenthaler, M., & Kirchler, E. (2015). Does the Sole Description of a Tax Authority Affect Tax Evasion? - The Impact of Described Coercive and Legitimate Power. <i>Plos One</i> , 10(4), e0123355. DOI: 10.1371/journal.pone.0123355	Investigating the impact of different descriptions of tax authority's power on tax payers' belief about tax authority's power and tax compliance.	4 Laboratory Experiments • Manipulation of fines (Exp 1) • Manipulation of coercive and legitimate power (Exp 2-4)
(3) Gangl, K., Hofmann, E., Hartl, B., & Kirchler, E. (in press). Power of Authorities and Trust in Authorities Determine the Interaction Climate and Tax Compliance. In	Investigating the dynamics between tax authority's power and taxpayers' trust and resulting tax compliance (enforced compliance, voluntary cooperation, committed compliance).	Questionnaire

L. Oats & D. Salter (Eds.), <i>Taxation</i> . In Memoriam Tim Vollans.		
(4) Gangl, K., Hofmann, E., de Groot, M., Antonides, G., Goslinga, S., Hartl, B., & Kirchler, E. (in press). Taxpayers' motivations relate to tax compliance: Evidence from two representative samples of Austrian and Dutch entrepreneurs. <i>Journal of Tax Administration</i> .	Examining the relationship between different motivations to comply (enforced compliance, voluntary cooperation, committed compliance) and tax compliance.	2 Representative questionnaires (Austria and the Netherlands)
(5) Hofmann, E., Hartl, B., Gangl, K., Hartner-Tiefenthaler, M., & Kirchler, E. (submitted). The Impact of Organizations' Coercive and Legitimate Power on Trust, Relational Climates and Motivations for Cooperation.	Investigating the underlying psychological processes regarding the relation of power and compliance in the tax context and in the insurance context.	3 Laboratory experiments • Manipulation of coercive and legitimate power (tax context) 1 Experimental questionnaire • Manipulation of coercive and legitimate power (insurance context)
(6) Hartl, B., Hofmann, E., Olsen, J., & Kirchler, E. (submitted). Sanctions in Real-Life Social Dilemmas: Impact and Intervening Factors.	Examining whether the impact of coercive power on cooperation differs over social dilemma situations and whether differences rest upon social dilemma related factors.	1 Laboratory experiment • Manipulation of coercive power and social dilemma situation 1 Experimental questionnaire

		• Manipulation of coercive power and social dilemma situation
(7) Hofmann, E., Hartl, B., & Penz, E. (submitted). Car sharing – company service or community trust.	Investigating power and trust in two different forms of collaborative consumption (business-to-consumer, self-regulating community).	Experimental questionnaire • Manipulation of collaborative consumption model (business-to-consumer versus community)
(8) Hartl, B., Hofmann, E., & Kirchler, E. (revise & resubmit). Do we need rules for 'what's mine is yours'? Attitudes towards governance in collaborative consumption. <i>Journal of Business Research</i> .	Investigating the impact of coercive power on cooperation in a collaborative consumption community and consumers attitudes towards the introduction of a sanctioning system.	Questionnaire • Within-subject design (no governance system versus governance system) Qualitative data

The impact of coercive power on tax compliance

A widely researched social dilemma situation regulated by an authority is tax compliance (cf., Andreoni, Erard, & Feinstein, 1998; Kirchler, 2007). Paying taxes represents a social dilemma, as taxes finance public goods, which cannot be provided if no one pays taxes (Hartl, Hofmann, Olsen, & Kirchler, submitted). The classical economic model of tax evasion (Allingham & Sandmo, 1972; Srinivasan, 1973), based on the economic model of criminal behavior (Becker, 1968), is the dominant theoretical model in research on tax compliance. In this model, taxpayers basically decide whether to evade taxes and thereby run the risk of getting audited and fined, or to pay honestly, which results in a sure loss. The classical economic approach assumes that taxpayers, aiming to maximize their utility, calculate which of these two options - paying taxes honestly or evading taxes - provides the greatest value. In order to maximize their utility, taxpayers would always evade taxes if audits and fines were absent (Allingham & Sandmo, 1972; Srinivasan, 1973). If, on the other hand, effective audits and severe fines are in place, taxpayers should pay honestly because the risk of being audited and fined outweighs the small chance of gain in case of tax evasion. The economic model therefore leads to the assumption, that audits and sanctions are the key mechanisms to ensure tax compliance. The application of audits and sanctions increases the costs for non-compliant behavior and thus, are proposed to be effective means for enhancing taxpayers' compliance.

The classical economic model still serves as a starting point for many studies on tax evasion, although empirical research on the effectiveness of audits and sanctions revealed contradicting results (e.g., Andreoni, Erard, & Feinstein, 1998; Kirchler, Muehlbacher, Kastlunger, & Wahl, 2010). As the impact of these economic key determinants seems to be more complex than assumed in the classical economic model, a current literature review is conducted, in order to provide an overview of research on tax compliance (Publication 1).

The aim of the first publication was to review tax behaviour research, taking the classical economic model as starting point. The book chapter further reviews psychological tax behaviour research, including the consideration of different segments of taxpayers and their respective attitudes towards taxes, their emotions (including results from a survey on emotions and power), social norms and taxpaying as social dilemma. The book chapter

ends by describing tax behaviour as a consequence of the relationship between taxpayers and the tax authority as the latest development in tax research, including the slippery slope framework (Gangl et al., 2015; Kirchler, 2007; Kirchler et al., 2008). The slippery slope framework (Kirchler, 2007; Kirchler et al., 2008) and its extended version (Gangl et al., 2015) describe the relationship between tax authorities and taxpayers in terms of the power of tax authorities (coercive and legitimate power) and taxpayers' trust in tax authorities (reason-based trust and implicit trust). According to the slippery slope framework, both power and trust increase tax compliance, but the resulting interaction climate between taxpayers and the tax authority, as well as the underlying quality of compliance, differ. The perception of coercive power is assumed to result in an antagonistic climate, in which the tax authority and taxpayers work against each other and taxpayers comply only because they feel forced to do so (enforced compliance). The establishment of legitimate power, which covers expert and informative procedures, and reason-based trust results in a service climate (or "synergistic and cooperative tax climate", Gangl et al., 2015), where taxpayers are perceived as clients of the tax authority. In such a climate, services are provided to help taxpayers to pay their taxes correctly. This results in voluntary compliance, as taxpayers find it easier to comply than to evade taxes.

Box 1. Brief overview of Kirchler, Hartl, & Gangl (in press; for more information see the attached publication).

Publication 1 displays that the impact of audits and fines on compliance is often found to be smaller and sometimes even in the opposite direction than theoretically expected (Andreoni, Erard, & Feinstein, 1998; Kirchler, Muehlbacher, Kastlunger, & Wahl, 2010). This may be due to the fact that individuals find it hard to deal with uncertainty, resulting in poor predictions of audit probabilities and fine rates (Andreoni et al., 1998; Fischer, Wartick, & Mark, 1992; Mittone, 2006). Taxpayers seem to base their tax behavior on their subjective beliefs regarding tax authority's power (Wahl, Kastlunger, & Kirchler, 2010), rather than on objective key economic figures. There are different ways by which taxpayers become aware of enforcement strategies of the tax authority (Alm, Jackson, & McKee, 2009), as taxpayers are confronted with official information disseminated by the tax authority as well as unofficial information. It is therefore of interest how taxpayers respond to information about the tax authority and whether descriptions of the authority affect taxpayers' beliefs regarding tax authority's power, and most importantly, tax compliance (Publication 2).

Based on the inconsistent findings regarding the relationship between the severity of fines and tax evasion, the aim of the second publication was 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 wielding power affects tax compliance, although objective information concerning audit probability and severity of fines is available.

Four laboratory experiments were conducted ($N_1 = 108$; $N_2 = 120$; $N_3 = 130$; $N_4 = 368$), in which the impact of information on fine rates (0.5 vs. 1 vs. 2 times the evaded amount; Experiment 1) and the impact of the description of an authority wielding different forms of power, solely and combined (Experiment 2-4), was examined. Further, it was investigated whether a contrast of the description of power (changing from low to high power; changing from high to low power) impacts tax payments (Experiments 2-4). In all experiments, participants were remunerated according to their decision.

Results showed that the amount of fine does not impact tax compliance, whereas descriptions of high coercive power as well as high legitimate power positively impact tax payments. This effect still persisted when both qualities of power (coercive power and legitimate power) were applied simultaneously. The contrast of descriptions (changing from low to high power; changing from high to low power) had little impact on tax evasion.

Box 2. Brief overview of Hartl, Hofmann, Gangl, Hartner-Tiefenthaler, & Kirchler (2015; for more information see the attached article).

The result of Publication 2 indicates that descriptions of the tax authority, e.g., in information brochures and media reports, have more influence on tax payments than objective information on fine rates. Methodically, these considerations become particularly important for experiments using descriptions or vignettes besides objective information.

Although Publication 2 shows that coercive power increases compliance, underlying psychological mechanisms that are elicited by coercive power and in turn might impact the intention to cooperate are not clear. Evidence that coercive power triggers psychological processes such as specific motives to cooperate which in turn might also explain cooperation is rare (cf., Hofmann et al., 2014). It is assumed that tax compliance is shaped by three different motivations to comply: enforced, voluntary, and committed motivation (Gangl et al., 2015). Taxpayers, who feel enforced to comply, pay taxes only because they fear audits and subsequent fines in case of tax evasion. Voluntary cooperation results if taxpayers respect the

law and pay taxes because they perceived it as the easiest option. Committed compliance represents an intrinsic motivation, whereby taxpayers feel morally obliged to pay taxes and feel a responsibility to be honest. For tax researchers as well as tax practitioners, it is relevant to know if authorities' coercive power prompts enforced compliance as taxpayers experience a threat of severe punishment and hence, decide to cooperate out of coercion (Kirchler et al., 2008; Van Meegeren, 2001). In order to examine the consequences of coercive power, two empirical studies investigate whether coercive power leads to enforced motivations to comply and examine the impact of enforced motivations on intended tax compliance (Publication 3 & 4).

The aim of the third publication was to investigate the dynamics between power and trust and their effect on tax compliance (enforced compliance, voluntary cooperation and committed compliance), based on the slippery slope framework (Gangl et al., 2015). An online questionnaire study ($N = 132$ taxpayers) was conducted, assessing different concepts of power, trust, interaction climates and motives of tax compliance. Structural equation modelling was applied (Byrne, 1998) in order to test the dynamics between power and trust.

Results showed that the perception of coercive power is related to enforced compliance whereas legitimate power leads to voluntary cooperation. Perceived coercive power eroded implicit trust in the tax authority, a dynamic which was related to an antagonistic interaction climate and enforced compliance. Although the perception of coercive power was a determining factor of an antagonistic climate between the tax authority and taxpayers, enforced compliance was a direct consequence of tax authority's coercive power and not mediated via an antagonistic climate.

Box 3. Brief overview of Gangl, Hofmann, Hartl, & Kirchler (in press; for more information see the attached article).

The aim of the fourth publication was to empirically examine the relation between motivations (enforced compliance, voluntary cooperation, and committed compliance) and reported tax compliance. In order to answer the research question, two representative studies were conducted in Austria ($N = 500$) and the Netherlands ($N = 1377$). In Austria, a market research agency sent out an online questionnaire to entrepreneurs who were remunerated for participation. In Study 2 data from the Dutch Fiscal Monitor 2010, mostly conducted via online questionnaires, was used. Study 2 was conducted in order to replicate

and strengthens the results of Study 1 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.

Results revealed that whereas enforced motivation is negatively related to intended compliance, committed motivation is positively related to tax compliance and voluntary motivation is unrelated to compliance. Taxpayers feeling an enforced motivation to pay taxes therefore also reported to be less tax compliant and paid taxes only if they are enforced to do so. The relation between voluntary motivation and tax compliance could be two-fold: Voluntary motivation might be both positively as well as negatively related to tax compliance, which in turn mutually dissolves each other. Voluntary motivated taxpayers might react according to the law but at the same time try to make use of legal loop holes in tax law if possible.

Box 4. Brief overview of Gangl, Hofmann, de Groot, Antonides, Goslinga, Hartl, & Kirchler (in press; for more information see the attached article).

Although sanctions are discussed as a possible solution to ensure cooperation, Publication 3 and 4 point out that the application of coercive power may have disadvantages in the tax context: The publications show that coercive power leads to enforced motivations to comply, which, under specific circumstances, may result in less tax compliance. The question arises whether coercive power yields the same consequences in other social dilemma situations. Authorities, like insurance agencies or public transport agencies, often apply coercive power in terms of audits and sanctions. It is therefore relevant to know whether coercive power actually increases cooperation of individuals or provides negative consequences for the community (resulting in less cooperation).

The impact of coercive power on cooperation in different social dilemma situations

The prosecution of non-cooperative behavior is a widely used solution in order to enhance cooperation in various social dilemma situations besides taxpaying (Kosfeld et al., 2009). Most of the empirical research concerning the effectiveness of sanctions in social dilemmas has been undertaken using experimental games, such as public goods games or trust games, which are mainly free of real life context. A meta-analysis on sanctions in social dilemmas provides empirical support for the effectiveness of sanctions (Balliet, Mulder, & Van Lange, 2011) and imposing sanctions is discussed as an applicable solution even for large-scale dilemmas (Kollock, 1998). Nevertheless, several empirical studies show that coercion can also negatively affect cooperation, especially in the case of weak sanctions (Tenbrunsel & Messick, 1999). The implementation of a sanction system and control mechanisms can prompt people to think of the decision to behave cooperatively or not in business terms rather than in ethical terms, resulting in less cooperation. When a sanction system is introduced, people doubt the good will of other community members, as it makes them aware that others might defect and exploit the community (Mulder, Van Dijk, De Cremer, & Wilke, 2006).

Although most of the empirical research regarding the effectiveness of sanctions in social dilemmas has been undertaken in experimental games, literature on specific social dilemma situations suggests that the impact of coercive power may differ in social dilemma situations. In the case of insurance fraud, many resources have been devoted to deterrence as the main strategy in addressing the problem of non-cooperation, equally to tax evasion (Lesch & Brinkmann, 2011). Although sanctions for insurance fraud do exist, fraud is highly accepted among insurance customers (Miyazaki, 2009), which may be a result of customers' perception that the risk of getting caught is low, and if caught, sanctions are modest (Dean, 2004). Research concerning fare dodging in public transportation shows that passengers will cooperate if they are enforced to do so by the authority's power (Wahl, Endres, Kirchler, & Boeck, 2011). The attitude towards fare dodging is closely related to the risk perception of being caught and punished, which results in the assumption that it is important to increase the level of risk perception among passengers (Barabino, Salis, & Useli, 2013). Further, public institutions use sanctions as means of deterrence in order to prevent harm to other citizens by

environmentally unfriendly behavior (Epple & Visscher, 1984; Schramme, 2011) but only limited evidence exists for their effectiveness (Almer & Goeschl, 2013).

Similar to evading taxes, committing insurance fraud or fare dodging, downloading copyrighted music from the internet without permission and paying are illegal offenses punishable by the law in most countries (Morton & Koufteros, 2008). Although it is assumed that illegal file sharing can be influenced through the perception of a possible punishment, empirical research shows that whereas sanctions have a strong deterrent effect for certain people, they can actually increase piracy tendencies for others (Morton & Koufteros, 2008; Sinha & Mandel, 2008).

Contradicting results of sanctions' effectiveness in different social dilemma situations may be due to the impact of intervening variables and related to the specific context of the social dilemma situation. In order to complement existing research, it seems necessary to examine and compare social dilemmas as they occur in everyday life. It is of interest whether and how the impact of coercive power differs in different social dilemma situations.

The aim of the fifth publication was to examine the consequences of coercive power in two exemplary social dilemma situations (tax evasion, insurance fraud). In order to answer the research questions, four experimental studies ($N_1 = 120$; $N_2 = 130$; $N_3 = 368$; $N_4 = 102$) were conducted, investigating the impact of the description of an authority wielding different forms of power (coercive power, legitimate power) solely and combined (Experiment 1-4) on trust, interaction climates and especially motives for cooperation (enforced compliance, voluntary cooperation and committed compliance).

Results revealed that the application of coercive power increases the perception of an antagonistic climate as well as enforced compliance. Additionally, legitimate power increased reason-based trust, the perception of a service climate, and voluntary cooperation. The combined prevalence of coercive and legitimate power lead to similar results, as coercive power increases the perception of an antagonistic climate and to an enforced motivation to comply. In contrast to the results concerning tax paying (Experiment 1-3), Experiment 4 showed that intended insurance fraud was not directly affected by coercive power. Nevertheless, the application of coercive power increased enforced compliance, which in turn decreased the intention to commit insurance fraud.

Box 5. Brief overview of Hofmann, Hartl, Gangl, Hartner-Tiefenthaler, & Kirchler (subm.; for more information see the attached article).

Research on the effectiveness of sanctions in economic games as well as in specific social dilemma situations leads to the assumption that social dilemma related factors need to be considered as impacting cooperation besides the severity of sanctions. Social dilemma situations are manifold and vary in the characteristics of the situation or characteristics of the punishing authority. People may act according to specific dilemma related factors and the impact of sanctions may differ, as mechanisms, like social norms, may get activated by relevant cues in the environment.

Based on inconsistent findings on the effectiveness of sanctions in different social dilemma situations, the aim of the sixth publication was to investigate the impact of sanctions on cooperation in different social dilemma situations (taxation, insurance, public transport, waste disposal, unauthorized download) and to examine psychological factors explaining the differences between social dilemma situations (social norms, perception of legitimate power, feelings of security, evaluation of offense), which so far had been studied independently.

In order to answer the research questions, two experiments were conducted. Study 1 investigated cooperation in a 2 (mild vs. severe sanctions) by 3 (taxation vs. insurance vs. public transport) between subjects laboratory experiment. In Study 2, two further social dilemma situations were implemented (waste disposal and internet piracy), leading to a 2 by 5 between subjects experimental online-questionnaire. Study 2 was designed to replicate the findings of Study 1 and to investigate psychological factors influencing the relationship between coercive power and cooperation.

Results of both studies revealed that participants are more likely to be cooperative if severe sanctions are applied by the authority and that absolute levels of cooperation differ over social dilemma situations (taxation, insurance, public transport, waste disposal, unauthorized download). Examining intervening factors in Study 2 (social norms, perception of legitimate power, feelings of security, evaluation of offense), the impact of coercive power became insignificant. Cooperation in the different social dilemma situations was rather predicted by participants' feeling of security, which was related to authority's legitimate power that again was related to social norms.

Box 6. Brief overview of Hartl, Hofmann, Olsen, & Kirchler (subm.; for more information see the attached article).

Another social dilemma situation is collaborative consumption. Collaborative consumption represents a form of consumption where people are provided with access to a good, mostly without high costs and responsibilities usually accompanied by ownership (Belk, 2014). Collaborative consumption covers a range of transactions in almost all business areas, including entertainment (e.g., file sharing), food (e.g., community gardens) and traffic (e.g., car sharing). Several start-ups facilitating collaborative consumption have become exceptionally successful and a growing economic factor (e.g., Airbnb, Zipcar) and more and more communities are created, sharing access to tools (open workshops), books (open libraries) or green areas (community gardens).

Collaborative consumption can be described as a social dilemma, as consumers using resources obtained by a community, like cars, books, or fruits grown in a community garden, are individually better off when they make use of these resources without contributing in return. If too many community members try to maximize their own utility by acting selfishly, the outcome will be a disadvantage for the whole community.

Over the past decades, collaborative consumption has grown in popularity. More and more consumers are engaging in collaborative consumption actions, for economic (e.g., cost-savings) or societal (e.g., trying to reduce environmental pollution) reasons. There are different ways consumers can engage in collaborative consumption activities, ranging from business models, in which companies arrange and regulate the access to a collaborative good, to models in which self-regulating communities organize this access. Consumers can therefore choose between different forms of collaborative consumption, e.g., deciding whether to share a car from a car sharing company (business-to-consumer) or sharing a car within a self-regulating community, like, e.g., neighbors sharing a car. The different forms of collaborative consumption differ in several aspects and are subject to specific challenges, leading to different implications for consumers and providers of the goods. Whereas companies regulate collaborative consumption commercially in business-to-consumer models, individuals may share goods and services in self-regulating communities. Consumers who decide to engage in a specific form may do so because of these specific features, for instance, because of the ability of the provider to punish misbehavior or reward cooperation as well as consumers' trust in the provider and in fellow users of the collaborative good.

The aim of the seventh publication was to investigate the difference between collaborative consumption regulated by an authority (business-to-consumer relations) and self-regulating communities (Birky & Strom, 2013; Schor & Fritzmaurice, 2015), regarding consumers' perceived power of the provider of the good, trust in the provider and other users and the resulting interaction climate between provider and customer. An online experimental questionnaire study was conducted in order to answer the research question.

The results show that whereas collaborative consumption models (company vs. community) differ according to the perceived power of the providers and trust in other users, cooperation does not differ within the two models. Whereas participants reported higher levels of a service climate, when consumption is organized by a company rather than a community, the experience of a confidence climate is higher in the community condition than with the company. Additionally, in the company the antagonistic climate is higher than in the community.

As model characteristics (power, trust, interaction climates) certainly determine consumers' decision of whether to engage in collaborative consumption activities, the results allow insights into consumers' preferences and aversion and gives valuable recommendations for companies and communities organizing collaborative consumption.

Box 7. Brief overview on the findings of Hofmann, Hartl, & Penz (subm.; for more information see the attached article).

Based on the results of Hofmann, Hartl, and Penz (submitted), companies organizing collaborative consumption are advised to have a functioning system of regulations in stall to protect customers from exploitation of the system. For car sharing companies this would mean to guard customers from users who bring back the car late or messy. Existing research shows that customers of a car sharing company welcome monitoring control mechanisms as an opportunity to induce equitable usage among all users (Bardhi & Eckhardt, 2012). However, when a community organizes collaborative consumption, no clear monitoring authority exists and there are often less explicit rules or legal regulations than in a business-to-consumer model (cf. Hofmann et al., submitted). Due to the increasing popularity of the concept of collaborative consumption, more and more communities are formed, facing the problem of whether to regulate access and sanction misuse or not. In order to prevent negative consequences of sanctions, it is necessary to know whether consumers would support the

regimentation in collaborative consumption communities like they do in business-to-consumer models (Bardhi & Eckhardt, 2012).

The aim of the eighth publication was to investigate how consumers react towards governance in collaborative consumption community. To answer the research question an experimental questionnaire, using a within-subject design, was completed by 355 participants. Participants were first introduced to a collaborative consumption situation (open workshop) without control mechanisms and sanctions (“no governance”). They should imagine living in a city in which a workshop exists at free disposal for all citizens, which enables citizens to lend tools for work around their house at no costs. All tools should be returned after three days. The access to and the use of the tools was not subject to any controls. In the second vignette (“governance”), due to a reorganization of the open workshop, a governance system had been established to better monitor the access and use of the common tools. Further, the community was now given the ability to sanction inappropriate use or delayed return of the tools. After each of the two vignettes, participants had to indicate how likely they would cooperate and return the tools within three days and whether they would support the introduction of a governance system or not – giving reasons for their evaluation (open question).

The results revealed that cooperation increased when sanction mechanisms were applied. The majority of participants (81.7%) supported the implementation of a governance system in the context of an open workshop, differing from non-supporters according to their trust in others. Qualitative data analysis of the reasons to support governance or oppose it shows that supporters argue that humans are egoistic, whereas non-supporters are concerned about negative consequences, asking for alternative incentives. To answer the question whether the reasons of cooperative participants for supporting the sanction system differ from uncooperative participants, a correspondence analysis was applied, differentiating between support for governance (support vs. non-support) and whether participants had indicated cooperative vs. uncooperative behaviour in the first vignette (“no governance”). Applying the correspondence analysis resulted in a two-dimensional configuration. Cooperative supporters were characterized by security concerns, such as ‘increase return rate’ and ‘humans are egoistic’. Uncooperative supporters are located near the category ‘humans need regulation’, which indicates that people need to be motivated by audits and sanctions in order to behave cooperatively. People, who do not

support the government system, and act cooperatively, ask for ‘alternative incentives’ and claim that there are ‘enough control mechanism’. Uncooperative people, who do not support the governance system, state that governance ‘breaks community’, leads to ‘no behavioural change’ and ‘negative consequences’.

Box 8. Brief overview on the findings of Hartl, Hofmann, & Kirchler (revise & resubmit; for more information see the attached article).

Discussion

The aim of the present dissertation was to investigate whether authorities’ coercive power impact cooperation in social dilemmas, starting from evidence on tax compliance. For this purpose, a theoretical review on cooperation in the tax context (Publication 1), three empirical articles on tax compliance (Publication 2-4) and four empirical articles on power and cooperation in other social dilemma situations (Publication 5-8) were presented. The opportunity to sanction non-cooperative behavior was examined covering both quantitative as well as qualitative research methods, using questionnaires as well as laboratory experiments.

The present dissertation reveals that coercive power does impact cooperation in the context of taxpaying (Publication 2), leading to an enforced motivation to comply (Publication 3 and 4). Based on the results on tax compliance, the current dissertation demonstrates that the consequences of coercive power differ depending on the social dilemma situation (Publication 5 and 6). This underlines earlier research results demonstrating that the frame of a social dilemma influences the tendency to cooperate, even if the different situations results in the same payoffs (Pillutla & Chen, 1999; Rege & Telle, 2004). Specific features of a social dilemma situation might unconsciously activate different concepts, like social norms, which are often guiding behavior (Biel & Thøgersen, 2007).

The present dissertation contributes to consumer research as well, thereby focusing on collaborative consumption. Although in conventional business relations consumers are protected from misconduct by legal rules, regulation mechanisms in the context of collaborative consumption are rare. Due to the growing popularity of collaborative consumption, it is relevant to understand what kind of challenges the new consumption paradigm provides for the market. The dissertation shows that collaborative consumption models differ in the perceptions of power, trust and interaction climates, but in the study

cooperation was equally high when consumption was regulated by a community as well as by a company (Publication 7). For collaborative consumption communities, which are gaining in popularity, consumers' request for governance seems to be a relevant outcome for the market (Publication 8). The current study shows that although the introduction of a governance system was supported by a great majority of participants, non-supporters fear negative consequences of coercive power. In general, negative consequences of sanction mechanisms in social dilemmas may be prevented via a differentiated approach whereby the community recognizes those members worthy of prosecution and those deserving of support (Braithwaite, 2001). The way how audits and sanctions are exercised seems to be a key determinant for the acceptance of a sanction system. Whereas the perception of a fair sanction system increases cooperation (Verboon & van Dijke, 2011), sanctions can destroy altruistic cooperation almost completely when they are not applied in a fair way (Fehr & Rockenbach, 2003). Some people might perceive the application of coercive power as a threat, which may cause reactance. Future research should therefore focus on the acceptance of coercive power and emotions towards coercive power. As sanction mechanisms are often costly, requiring extensive human and physical resources (e.g., Lesch & Brinkmann, 2011), it is necessary to identify benefits as well as disadvantages of coercive power in the respective social dilemma situation.

The insights gained from the current dissertation have a considerable scientific as well as practical impact. As most societies today have implemented authorities to punish non-cooperation, the question of whether the application of coercive power increases cooperation in social dilemma situations or not is of high importance. For instance, if more people use public transportation than individually driving by car, environmental pollution could substantially be decreased (cf., Stern, 1992; Van Lange, Van Vugt, Meertens, & Ruiter, 1998). Results of the present investigations suggest that besides the application of coercive power, characteristics of the specific social dilemma situation need to be considered, in order to increase cooperation. The present dissertation therefore underlines the importance of applying research on public goods games to real world social dilemma situations by taking into account specific dilemma related factors. Using a variety of methods seems thereby to be the key for a comprehensive understanding of cooperation in social dilemmas situations. In the current laboratory experiments, the decisions to cooperate or not are solely based on the description of social dilemma situations. This is in contrast to real world social dilemmas which are characterized as social situations, in which people interact with other group members, as well as with the authority. Future research should therefore complement laboratory research, by using insights gained from economic games to understand cooperation

in political decisions, pro-environmental decisions (Joireman, 2005) or consumer decisions. Field experiments that investigate the impact of power on cooperation in specific social dilemma situations could strengthen the present results; tax authorities, insurance companies or waste disposal agencies displaying coercive power would show the effects of power in vivo.

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Reprint of main articles

Publication 1

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Abstract

Governments have been collecting taxes for centuries and are creative in introducing new taxes. In the following chapter, we describe the classical economic perspective on tax behavior which has dominated tax research for decades. Tax paying decisions are conceptualized as decisions under uncertainty, shaped by the probability of audit and the severity of punishment in case of detected wrong-doing. We present psychological tax behavior research and consider different segments of taxpayers and their respective attitudes towards taxes. Taxpayer behavior is also discussed as behavior in a social dilemma situation with decisions influenced by rational utility maximization and beliefs about other taxpayers' behavior. We conducted a survey on emotions, the perceived power of authorities and compliance to gain insight into emotional reactions towards taxes, which are relevant to understanding interactions between taxpayers and tax authorities and mutual cooperation. Finally, we discuss current developments in the field and possible future research directions.

Introduction

Governments have been collecting taxes on income, consumption, property, etc. for centuries and are creative in introducing new taxes. Tax collectors develop strategies to enforce compliance, and citizens, though grateful for the provision of public goods, engage in attempts to reduce their tax obligations. Citizens value public goods and comprehend the necessity of tax collection to finance them, but are at the same time often reluctant to accept the full burden of their taxes. Indeed, since the beginning of tax collection, taxpayers have complained, and their complaints survive in the hieroglyphics of ancient Egypt and in the work of scholars from medieval times until today. For instance, Thomas Aquinas (1225-1274) is said to have coined the description of taxes as “legal theft”; and Peter Sloterdijk (2010) wonders why the public has not engaged in a civil rebellion against the prodigious enlargement of the tax base, which he perceives as the equivalent of socialist expropriation.

In a recent survey in Germany, taxpayers show an ambivalent attitude towards taxation and taxes: although the majority of respondents retain that paying taxes is a duty which must be respected, a vast majority complain that the tax burden is much too high, the legal and bureaucratic procedures of filing taxes are complex and too time consuming, and politicians spend tax money wastefully (Deutsche Wirtschafts-Nachrichten, 2014). Tax attitudes vary among taxpayers: self-employed appear to hold more negative attitudes than white collar workers or civil servants (Kirchler, 1998), and citizens expressing preferences for liberal and right-wing political parties also express preferences for “less state” and lower taxes as compared to those who typically vote for left-wing parties (Lozza, Kastlunger, Tagliabue, & Kirchler, 2013; Sussman & Oliviola, 2011).

The desire to reduce taxes can be even stronger than rational maximization of one’s own profit, leading to the selection of suboptimal options. Sussman and Oliviola (2011) presented scenarios describing two stores selling TV sets which the participants were to imagine purchasing. They were invited to choose either buying the TV at full price in a store nearby or to take a 30-minute drive to a store offering a discount. In one condition the discount was related to taxes (tax-free discount equivalent to 8% discount); in the other condition, taxes were not mentioned but the discount was slightly larger (9% discount). Willingness to take the 30-minute drive was significantly higher if the discount was related to taxes, even if the discount was smaller. If taxes can be avoided, people are also willing to wait longer for a commodity, to invest in riskier assets, and express higher acceptance when

confronted with moving to a country with a longer daily commute (Sussman & Olivola, 2011).

People perceive tax evasion as illegal and unacceptable, whereas they endorse tax avoidance, defined as the legal reduction of taxes (Kirchler, 1998; Kirchler, Maciejovsky, & Schneider, 2003). Tax avoidance refers to the reduction of one's tax burden within the limits of the law, for instance, through the exploitation of tax loopholes. Tax avoidance can be perceived as a positive and clever act (Kirchler, Maciejovsky, & Schneider, 2003). In contrast, tax evasion is seen as immoral, illegal and as a form of fraud associated with the shadow economy (Kirchler, Maciejovsky, & Schneider, 2003). Also, tax avoidance in the form of aggressive tax planning against the spirit of the tax law, such as the cross-border money shifting of international companies, is seen as unfair by many taxpayers and provokes protests by the media and the citizens. For example, in 2011, the IT company Apple made a profit of 22 billion USD, but due to aggressive tax planning, the company paid less than one percent of its profit in taxes (Szigetvari, 2014). When Starbucks was accused of aggressive tax planning in the United Kingdom by the media, consumers took to the streets in protest of this non-cooperative behavior and boycotted Starbucks stores (Cambell, 2012).

In this chapter, we start with the economic perspective on tax behavior which has traditionally dominated tax research. Tax-paying decisions are conceptualized as decisions under uncertainty, shaped by the probability of audit and the severity of punishment in case of detected wrong-doing. We then present the results of psychological tax behavior research and consider different segments of taxpayers and their respective attitudes towards taxes. In the third section, tax behavior is discussed as a behavior in a social dilemma situation with decisions influenced by rational utility maximization and beliefs about other taxpayers' behavior. In this section, we briefly present a survey conducted on emotions, the perceived power of authorities and compliance. In the fourth section, we illustrate how the interaction between taxpayers and tax authorities determines cooperative interaction climates and corresponding forms of tax cooperation. We conclude with a discussion of current developments in the field and future research directions for tax psychology.

1. The economic approach

The neoclassical economic approach to tax behavior is based on the assumption that taxpayers, aiming to maximize their utility, are confronted with a decision under uncertainty. It is suggested that taxpayers calculate which of the two options - paying taxes honestly or evading taxes - provides the greatest value. If effective audits with severe fines are in place

and the probability of audit is high, a taxpayer should be honest because the risk of being caught and fined outweighs the small chance of gain through evasion. In contrast, if audits are rare and fines low, a rational taxpayer would choose to evade taxes because the risk of being caught is low and even if that were to happen, the fine is low. Since taxpayers seek to accrue higher profits, they would always evade if audits and fines were absent (Allingham & Sandmo, 1972; Srinivasan, 1973). Audits and fines are the keys to ensuring tax compliance.

Empirical research suggests that the effect of audits and fines is more complex than assumed in the economic theory of crime (Becker, 1968). Indeed, the effect of audits and fines is smaller than theoretically expected and sometimes in the opposite direction (Andreoni, Erard, & Feinstein, 1998; Kirchler, Muehlbacher, Kastlunger, & Wahl, 2010). In many countries in the world, the probability of audit is low, which should result in low tax honesty; however, tax honesty is rather high compared to the audit rates (Kirchler, 2007). For instance, the Internal Revenue Service in the United States (IRS) audited about one percent of the more than 137 million returns filed by taxpayers in 2008 (Bible, 2010). Despite the low audit probability, about 80% of total reportable income is assumed to be reported correctly, while 18–23% of reports are incorrect (Cebula & Feige, 2012).

The contradictory effects of audits may be due to the fact that it is hard for people to deal with uncertainty. They often underestimate or overestimate the likelihood of events. Therefore, the perceived and objective probability of audit may differ significantly (Fischer, Wartick, & Mark, 1992). The effect of audits seems to vary more with their perceived severity than with their actual severity. The more severe audits and fines are perceived to be, the stronger their impact on tax compliance (Alm, Jackson, & McKee, 1992; Kirchler, 2007; Mulder, Verboon, & De Cremer, 2009). For instance, frequent audits at the beginning of one's professional life in contrast to later audits may increase a taxpayer's perception of high audit probability and lead to sustainable tax compliance. Tax experiments in which participants file taxes on earned income over a "lifespan" of 60 filing periods showed that audits conducted at the beginning of the 60 rounds (in contrast to later audits) lead to an increase in tax compliance and keep tax compliance high even if the frequency of audits decreases in the later rounds (Guala & Mittone, 2002).

Misperception of chance can also lead to the opposite of the intended effects. The same tax experiments also showed that tax compliance decreases immediately after an audit takes place (Guala & Mittone, 2002; Kastlunger, Kirchler, Mittone, & Pitters, 2009). It seems that after an audit, taxpayers feel safe from another audit in the next round and choose risk-seeking behavior. This phenomenon is referred to as the "bomb crater effect" (Guala &

Mittone, 2002) following the observation in World War One that soldiers under heavy fire believed themselves to be safe in the craters of recent explosions, assuming it would be unlikely for two bombs to fall in the same spot. Likewise, taxpayers may underestimate the likelihood of upcoming audits immediately after they have been audited (Kastlunger, Kirchler, Mittone, & Pitters, 2009) and therefore evade. Instead of the objective audit probability, it seems that the perceived audit probability determines tax compliance.

Beside audits, fines are assumed to be a useful measure to diminish tax evasion. According to classical economic assumptions, the amount of a possible fine has a positive effect on taxpayers' willingness to pay taxes honestly (Allingham & Sandmo, 1972). This effect might be undermined by causing reactance instead of subordination (Kirchler, 2007). The implementation of fines per se may lead to reactance and negative attitudes towards the tax authority. As such, the imposition of a fine can also crowd out the intrinsic motivation to comply (Feld & Frey, 2002). Gneezy and Rustichini (2000) studied parents' behavior in Israeli day care centers before and after the introduction of a fine for late pick up of their children. After the introduction of a monetary fine for latecomers, delayed pick-ups increased rather than went down. Instead of feeling guilty about their late pickups, parents had a clear conscience about leaving their children longer under custodial care and made less of an effort to be punctual. Rather than being perceived as a fine, the payment was gladly accepted as a "price" for prolonged custody.

Generally, audits and fines impact tax compliance positively, but the effect is smaller than theoretically expected, and sometimes audits and fines backfire (Alm, Sanchez, & de Juan, 1995; Gangl et al., 2013). Audits might be perceived as an unpleasant experience whose probability of occurrence decreases immediately after an audit has occurred; fines sometimes might be perceived as a "price" people are willing to pay. Audits and fines can also be perceived as a signal of mistrust from the tax authority and elicit mistrust in the authorities and non-cooperative behavior (Alm et al., 2012; Feld & Frey, 2007).

2. Differential effects

Taxpayers are not a homogeneous group of people trying to evade taxes. Instead, based on different socio-demographic characteristics and experiences with the tax authorities, taxpayers can be assumed to differ in their motivation to pay taxes and in their compliance. Women, older taxpayers as well as employees taxed at source are found to be more compliant than men, younger taxpayers, and self-employed taxpayers (Kirchler, 2007; Torgler, 2006). Based on such differences, tax authorities could segment taxpayers into groups and take a

different approach with each group. Audits and fines may be most appropriate to enforce compliance among taxpayers intentionally evading, whereas they should assist and educate those who want to comply but fail to do so due to the complexity of tax law (Braithwaite, 2003b).

Women are often found to be more compliant than men. This effect seems to have social rather than biological reasons (Kastlunger, Dressler, Kirchler, Mittone, & Voracek, 2010). The classic social role of women is typically associated with pro-social and cooperative behavior, in contrast to the social role of men (Fallan, 1999; Kastlunger, Dressler, Kirchler, Mittone, & Voracek, 2010). Empirical research shows that it is only those women who identify with the classical gender role differ from men in their tax compliance (Kastlunger, Dressler, Kirchler, Mittone, & Voracek, 2010). However, self-employed women, who seem to identify less with the classical role and more with their occupational role, which is associated with values such as competitiveness and dominance, do not seem to be more compliant than self-employed men (Gangl et al., 2013). As a consequence, gender could be a criterion for tax authorities to differentiate among employed taxpayers but not among self-employed taxpayers.

Tax compliance seems to increase with age. Older taxpayers are consistently found to be more tax compliant than younger taxpayers (Frey & Torgler, 2007; Kirchler, 2007; Lewis, 1978; Sidani, Ghanem, & Rawwas, 2014). The reason might be that age correlates with knowledge about taxes, experiences with taxes, and a better understanding of the tax law, which in turn enhances trust in tax law. Moreover, knowledge about taxes enhances the opportunities for a taxpayer to legally reduce their taxes instead of illegally evading them. For instance, younger taxpayers with less experience might not put money aside during the year in order to pay their taxes at the end of the year (Muehlbacher & Kirchler, 2013). In contrast, based on “mental accounting”, older taxpayers are more likely able to separate gross income into net income, tax duties and social security payments and consequently put tax money at least “mentally” aside, which “prepares” them to pay taxes. Rather than having the feeling that they are paying out of pocket, and thus experiencing a loss when paying taxes, mental accounting leads to the perception of a forgone gain when paying taxes, and thus, to less risk-seeking behavior. While younger taxpayers may experience an unpleasant surprise when filing and paying taxes, older taxpayers anticipate tax duties (Muehlbacher & Kirchler, 2013). Based on these assumptions, it can be assumed that tax authorities who provide young self-employed people and less experienced businesspeople with services introducing them to the

tax law and tax procedures would increase tax knowledge while improving money management related to taxes, which would lead to higher compliance.

Income has been investigated as a potential moderator of tax compliance. From a theoretical perspective, high income earners could be either more or less compliant than low income groups, and empirically, income has been found to be both related and unrelated to compliance (Allingham & Sandmo, 1972; Srinivasan, 1973). High income might increase one's willingness to take the risk of evading taxes because possible fines might be seen as easy affordable. Conversely, low income might also increase the motivation to evade taxes because the money spent on taxes might represents a larger fraction of available income. The results of empirical studies are inconclusive (Pickhardt & Prinz, 2014). It seems that factors related to income, such as source of income, might play a relevant role (Durham, Manly, & Ritsema, 2014). For instance, experiments show that taxes on windfall gains are more likely to be evaded than money earned through hard work (Muehlbacher et al., 2008).

Occupation has been tested as an essential determinant of tax compliance and an important segmenting criterion. Employed and self-employed taxpayers differ in their opportunities to evade taxes. Also, in many countries, employed taxpayers' income is taxed at source as compared to the self-employed, who take home their gross income and pay taxes out of pocket (Antonides & Robben, 1995; Engström & Holmlund, 2009; Webley, Cole, & Eidjar, 2001; Webley, Robben, Elffers, & Hessing, 1991). Self-employed people who pay taxes out of pocket not only face more opportunities to engage in "creative" tax planning, in the concealment of income and the exaggerated deduction of expenditures, but also have a tendency to exhibit more risk-seeking behavior due to perceived loss (Antonides & Robben, 1995). Self-employed taxpayers' compliance is often explained in light of prospect theory (Kahneman & Tversky, 1979). Depending on whether taxpayers conceive of their tax decision as within a forgone gain frame or a loss frame, they are expected to either be risk averse or to take the risk and evade.

Prospect theory explains also withholding phenomena: It is to be expected that people who have, for example, already paid taxes in advance in the form of monthly contributions and then have an additional sum to pay at the end of the fiscal year experience this balance as a loss and are reluctant to pay additional taxes. In contrast, taxpayers with the same total amount of tax liability who have already paid all of their taxes in advance, resulting in a year-end refund, may experience their taxes when filing at the end of the year as a gain and tend to be loss averse, resulting in willingness to declare revenue and expenses correctly. A study by Cox und Plumley (1988; quoted in Webley, Robben, Elffers & Hessing, 1991) shows that

these assumptions might be accurate. The authors investigated 50,000 tax declarations in the US and found that willingness to pay taxes depended upon whether a taxpayer was expecting a refund from the tax authorities or faced a balance due. For wage earners, it has been demonstrated that willingness to pay taxes reaches 96% when a refund is expected. On the other hand, when a balance due is expected, willingness to pay drops to 89%. People with business income act even more clearly according to the predictions of prospect theory: willingness to pay varies from 96% to 70%, depending on whether they expect to receive a refund or make an additional payment. Figure 1 illustrates the results of Cox and Plumley's (1988, p. 84) study. Similar results were achieved by Schepanski und Kelsey (1990) and Schepanski und Shearer (1995) as well as by Elffers and Hessing (1997), and Kirchler, Maciejovsky, and Weber (2005).

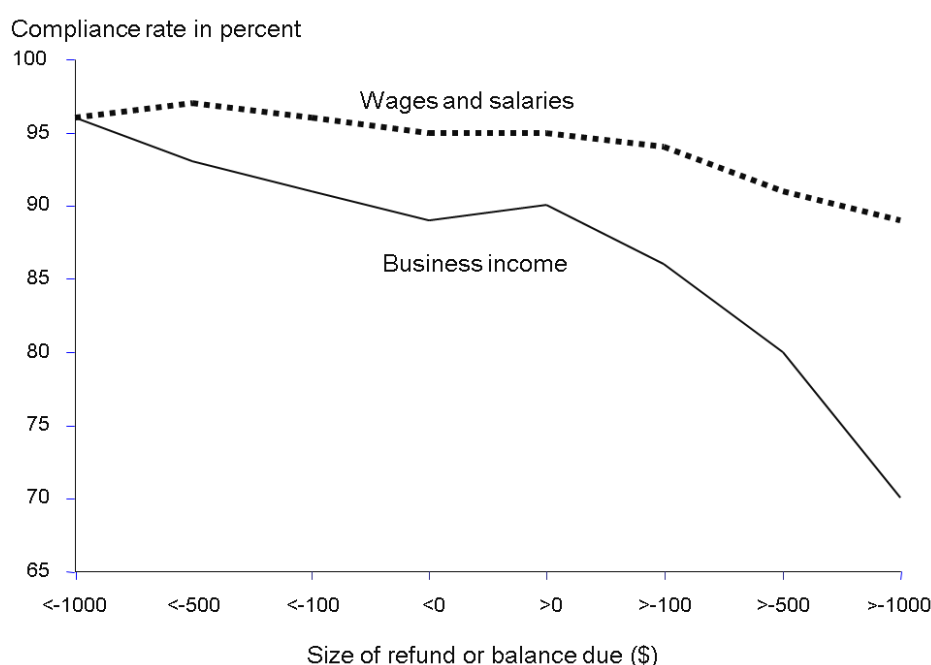


Figure 1: Willingness to pay taxes as dependent upon the type of tax and the size of refund or balance due at the end of the fiscal year (Cox & Plumley, 1988; quoted in Webley, Robben, Elffers, & Hessing, 1991, p. 84)

Taxpayers do not only differ in their socio-demographic characteristics, but also in their experiences and relationship with the tax authorities, factors which are also suggested to result in differences in individual motivations to be honest. Braithwaite (2003a) distinguishes among five motivational postures of tax compliance based on the social distance taxpayers perceive towards the tax authority. Two motivational postures (commitment, capitulation)

represent an overall positive orientation to the tax authority. The motivational posture of commitment describes taxpayers who feel morally obliged to pay taxes; they are open to admitting mistakes and want to correct them. Taxpayers holding the motivational posture of capitulation are not as committed; rather, they accept the tax authority as a legitimate authority and give in to this authority. The other three motivational postures (resistance, disengagement, game playing) express a negative tendency to cooperate. Resistant taxpayers doubt that the tax authority intends to behave cooperatively and keep their guard up. Disengaged taxpayers see no sense in cooperating and try to keep their distance to the tax authorities. ‘Game playing’ reflects a motivational posture and attitude toward laws, whereby the law is seen as something that can be used for one’s own advantage (Braithwaite, 2003a).

Based on these motivational postures, the Australian Tax Office has proposed a system of responsive regulation in order to address taxpayers effectively (Braithwaite, 2003b). The responsive regulation approach requires tax authorities to apply different strategies to ensure tax compliance for taxpayers with differing motives to comply or not to comply. Instead of treating all taxpayers alike, the tax authorities should approach taxpayers depending on their motivational posture. Taxpayers who intentionally evade taxes should be confronted with the full rigor of the law. In contrast, taxpayers who hold positive motivational postures of commitment and capitulation should get assistance and support from the tax authorities (Braithwaite, 2003b). Figure 2 conceptualizes the responsive regulation approach. The bottom of the pyramid mirrors empirical findings indicating that most taxpayers hold motivational postures reflecting a compliance-minded attitude (Braithwaite, 2003b). The appropriate strategy of the tax authorities for most taxpayers would be to facilitate compliance by educating taxpayers and providing services. Conversely, the tax authorities should apply the full force of the law only for the minority of intentional resistant evaders, represented by the top of the pyramid (Braithwaite, 2003b; 2009).



Figure 2: The responsive regulation approach based on different motivational postures of taxpayers (adapted from Braithwaite, 2003b, p. 3).

3. Social norms and social dilemmas

Taxpayers do not pay taxes in a social vacuum (Mittone & Patelli, 2000) and do not only consider the balance between the tax burden and the provision of public goods, but also orient their behavior on other taxpayers' behavior. Taxpayers' conceptions of the attitudes and activities of other taxpayers impact their decision on whether to pay taxes honestly or not. As people feel part of social groups, their decisions are often motivated by group norms (Frey & Torgler, 2007; Wenzel, 2007). In this vein, social norms consistently prove to be a strong regulator of behavior since one's own tax compliance is related to the perceived noncompliance of others (Wenzel, 2005). The term "social norm" is either defined as what is commonly done in a community (descriptive norm) or what is commonly approved and disapproved by the community (injunctive norm; Kallgren, Reno, & Cialdini, 2000). Individuals will comply as long as they believe that other people pay taxes honestly and that compliance is the social norm for the group they identify with.

Wenzel (2005) shows that people overestimate others' acceptance of tax evasion. An intervention whereby participants are informed about the actual social norms on tax evasion could reduce tax cheating. In addition, a large-scale field experiment in the United Kingdom by Hallsworth, List, Metcalfe and Vlaev (2013) shows that social norm messages increase compliance. Over 100,000 taxpayers received letters from the tax authority which varied only

in the inclusion of a short phrase after the first sentence. Some of these letters contained messages based on social norms (e.g. *“Nine out of ten people pay their tax on time”*, Hallsworth, List, Metcalfe, & Vlaev, 2013, p. 34). The results show that including norm messages in a standard tax payment reminder letter enhances tax compliance, with the greatest effect obtained from the “minority norm” treatment, where taxpayers were informed that *“Nine out of ten people in the UK pay their tax on time. You are currently in the very small minority of people who have not paid us yet”* (Hallsworth, List, Metcalfe, & Vlaev, 2013, p. 34). Similar to perceived social norms, tax morale, civic duty, taxpayer identity, appeals to patriotism or conscience, and feelings of altruism and morality also impact tax compliance (Torgler, 2007).

As taxes are used to finance public goods for the good of the community, taxpaying represents a social dilemma. The term “social dilemma” refers to a situation in which the interest of an individual is opposed to the interest of the community or the group (Dawes, 1980). When people use a public resource, they are individually better off when they make use of it without contributing in return – for instance, without paying taxes. They can benefit by acting selfishly as “free riders”. However, if most people maximize their own utility and act selfishly, the outcome can be a disaster for everyone (Kollock, 1998). Public goods will not be provided and as a consequence everyone will be harmed.

Experimental evidence indicates that communication between individuals, opportunities to participate in setting up the rules of the game, and the public announcement of defection increase cooperation in social dilemma games (Kollock, 1998). Emotions also seem to play an important role in social dilemmas and are assumed to influence people’s tendency to choose individual interests over collective interests (Polman & Kim, 2013). An investigation concerning the effect of anger, disgust and sadness on people’s willingness to give shows that angry people give fewer shared resources to others, whereas disgust and sadness lead to more resource-giving (Polman & Kim, 2013). Coricelli, Joffily, Montmarquette, and Villeval (2010) measured skin conductance and self-reports to show that emotional arousal is associated with cheating behavior: A high degree of emotional arousal correlates with the likelihood of tax evasion and the amount evaded. Further, tax compliance was higher when the pictures of evaders were made public. The impact of shaming on tax compliance remains beneficial over the long term if the contravener is reintegrated into the group after evading, but leads to higher levels of evasion when reintegration fails (Coricelli, Rusconi, & Villeval, 2014). Tax decisions therefore may be driven by the willingness to avoid negative emotions, which may occur, for instance, during public denouncement. Emotions

also play a role when taxpayers perceive the tax authority as unjust. People differ in their affect intensity, so they react more or less emotionally to their treatment by the tax authorities (Murphy, 2009). When people feel unfairly treated by an authority, they feel anger and in turn, reduce compliance (Murphy & Tyler, 2008). Those who feel that the authority used procedural justice during its enforcement action are less likely to feel anger, and are therefore also less likely to evade taxes (Murphy, 2009). Although research on emotions in the context of taxpaying is relatively scarce, the existing evidence indicates that the interplay of cognition and affect moderates the effectiveness of key economic variables like audit probabilities and fines (Maciejovsky, Schwarzenberger, & Kirchler, 2012).

Survey on emotions related to taxes, perceived protective power and compliance

We conducted a survey investigating the relationship between emotions, authorities' perceived use of their power to detect and punish evasion, and tax compliance. A representative sample of 500 Austrian self-employed taxpayers (61% men, $M_{\text{age}} = 44.46$ years, $SD_{\text{age}} = 10.55$ years) were presented with PANAS (20 items, Watson, Clark, & Tellegen, 1988), an instrument to measure 20 qualities of emotions, and six additional items based on the PANAS-X (Watson & Clark, 1994). Respondents were asked to indicate their emotions when thinking of the tax authority on a 7-point Likert scale (7=high emotional intensity). They were also asked how likely it was that they had paid their taxes honestly in the past year (7-point Likert scale; 7= very likely) and to indicate whether they feel that the tax authorities exert power in an undifferentiated way to combat tax evasion or in a well-targeted way towards wrong-doers in order to protect cooperative citizens (7-point Likert scale). The items read as follows:

- (1) As the tax authority takes targeted action against tax evaders, I feel protected by the authority.
- (2) As the tax authority indiscriminately takes action against all taxpayers, I feel like I'm being harassed by the authority.
- (3) People who pay their taxes honestly do not have to fear audits and fines.
- (4) Even people who pay their taxes honestly have to fear indiscriminate audits and fines.

We computed the mean response to these four items, labeled as perceived protective power, and computed Pearson correlations between the 26 emotions, past tax compliance and protective power. Table 1 shows means, standard deviations and correlations. Respondents who perceive tax authorities as exerting protective power have a greater interest in taxes and indicate that they do not feel hostile, irritated, disgusted, upset, scornful, scared, afraid, nervous, sad, distressed, confused, ashamed, or guilty. Also, they indicate higher past compliance. In sum, although protective power seems unrelated to positive emotional qualities, the opposite, untargeted power, is related to strong negative emotions.

Table 1: Protective power, tax compliance and emotions

<i>Quality of emotion</i>	M (SD)	Protective power	Past Compliance
Interested	2.99 (1.64)	.17*	-.03
Proud	2.05 (1.39)	.06	-.21*
Active	2.93 (1.72)	.05	-.06
Strong	2.40 (1.40)	.03	-.18*
Excited	1.74 (1.18)	.02	-.23*
Enthusiastic	1.87 (1.27)	.01	-.21*
Inspired	2.24 (1.46)	.01	-.21*
Attentive	3.54 (1.83)	-.00	-.05
Unburdened	2.21 (1.40)	-.03	-.24*
Determined	2.89 (1.70)	-.09	-.06
Alert	3.20 (1.73)	-.12	-.06
Unemotional	3.41 (2.03)	-.16	-.06
Surprised	2.29 (1.51)	-.16	-.19*
Guilty	1.92 (1.43)	-.22*	-.31*
Ashamed	1.98 (1.39)	-.24*	-.31*
Confused	2.36 (1.59)	-.29*	-.25*
Distressed	3.08 (1.75)	-.30*	-.15
Sad	2.34 (1.77)	-.31*	-.13
Nervous	2.48 (1.67)	-.34*	-.23*
Afraid	2.28 (1.64)	-.35*	-.23*
Scared	2.46 (1.67)	-.38*	-.21*
Scornful	2.40 (1.75)	-.47*	-.19*
Upset	3.61 (1.89)	-.49*	-.06
Disgusted	2.94 (2.04)	-.49*	-.12
Irritable	3.39 (1.94)	-.51*	-.08
Hostile	2.69 (1.77)	-.51*	-.17*
Protective power	4.55 (1.38)		.17*
Past compliance	1.65 (0.48)		

Note: N = 500; 7-point Likert-type scales; $r > .16$ significant at $p < 0.01$ (Bonferroni corrected)

4. Interactions between the tax authority and taxpayers

Tax behavior can be viewed as the result of a “psychological contract” which regulates the interactions between taxpayers and the tax authority (Feld & Frey, 2007). This relational contract involves strong emotional ties, building on a norm of reciprocity that goes beyond legal regulations. Commitments from taxpayers on the one hand require an equivalent commitment from the tax authority on the other hand. The psychological contract approach assumes that as long as taxpayers are treated like equal partners instead of “robbers” or subordinates, taxpayers will cooperate.

The slippery slope framework (Kirchler, 2007; Kirchler, Hoelzl, & Wahl, 2008; Kirchler, Kogler, & Muehlbacher, 2014), presented in Figure 3, suggests that the relationship between tax authorities and taxpayers can be described in terms of the power of tax authorities and taxpayers’ trust in tax authorities. The power of tax authorities is the perceived ability of the tax authorities to prosecute tax evasion, whereas trust in the tax authorities is defined as the tax authorities’ perceived benevolence and competence in working for the common good. Whereas power is assumed to lead to an antagonistic interaction climate in which tax authorities and taxpayers work against each other and taxpayers only comply out of a fear of enforcement, trust in the tax authorities is believed to foster a synergistic and cooperative tax climate and taxpayers’ voluntary cooperation (Kirchler, Hoelzl, & Wahl, 2008; Kirchler, Kogler, & Muehlbacher, 2014). Experimental evidence from different countries suggests that, independent of cultural differences, power and trust determine enforced and voluntary tax cooperation, respectively (Kogler, Batrancea, Nichita, Pantya, Belianin, & Kirchler, 2013).

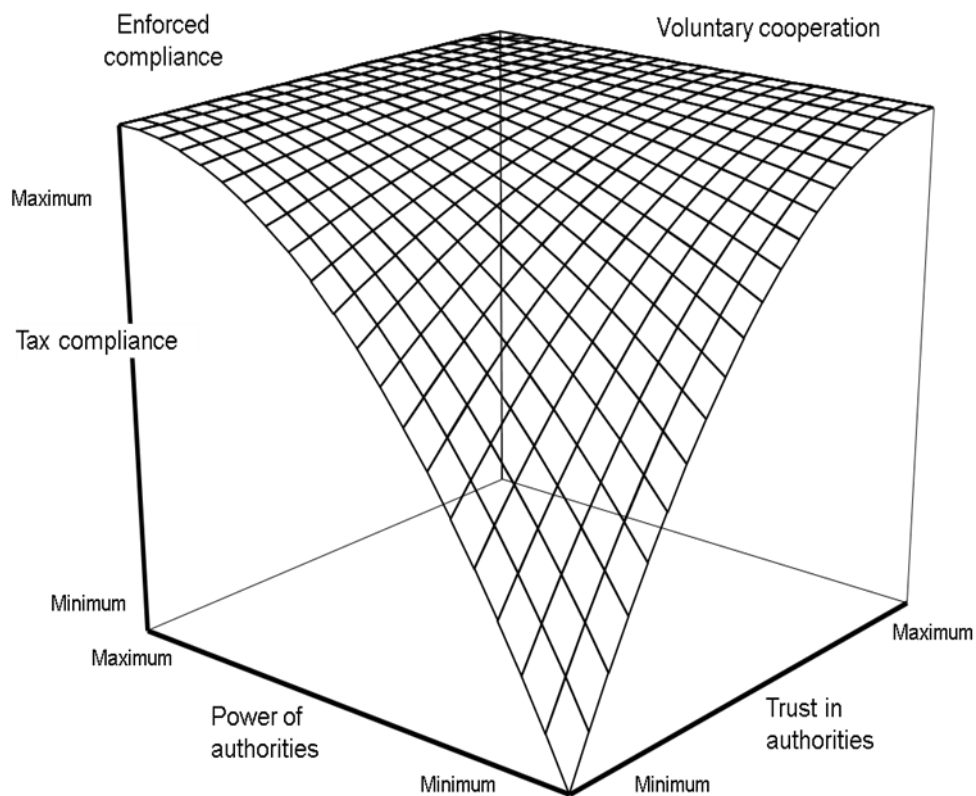


Figure 3: The slippery slope framework of tax compliance (Kirchler, Hoelzl, & Wahl, 2008, p. 212)

The transformation from an antagonistic climate with enforced compliance to a synergistic climate with voluntary and committed tax cooperation can be described on the basis of the distinction between different qualities of power, i.e., coercive power and legitimate power, and different qualities of trust, i.e., reason-based trust and implicit trust (Gangl, Hofmann, & Kirchler, in press). Coercive power based on audits and fines creates a hostile, antagonistic climate and fuels a vicious cycle of distrust between tax authorities and taxpayers. However, if coercive power is combined with legitimate power -- that is, expertise, the provision of information, and following accepted procedures -- coercive power might be perceived as a safeguard for the compliant majority and taxpayers develop reason-based trust in the competence, motivation, and benevolence of the tax authorities (Hofmann, Gangl, Kirchler, & Stark, 2014). Hence, a synergistic service climate develops in which the tax authorities and taxpayers interact in a professional relationship with each other, like a service provider and its clients. Further, over time and through positive experiences, trust initially based on rational consideration might become implicit and automatic, and tax authorities and taxpayers can come to mutually trust and respect each other. The synergistic climate deepens

from a service climate to a confidence climate. In a confidence climate, tax authorities avoid coercive power and taxpayers, in turn, are committed and pay their taxes automatically.

The dynamics between power and trust illustrate why it is difficult and time-consuming to build up trust and a synergistic tax climate and also, vice versa, why the destruction of a synergistic relationship between tax authorities and taxpayers can happen easily and quickly. A confidence climate can easily decay, transforming back to an antagonistic climate, if strong power measures alienate taxpayers, particularly if coercive power is applied without legitimate power. Although a service climate is assumed to be more stable than a confidence climate, it can also be destroyed if coercive power is applied without legitimate power (Gangl, Hofmann, & Kirchler, in press). Hence, coercive power in combination with low legitimate power easily destroys a synergistic tax climate and leads to an antagonistic climate.

These assumptions on the dynamics between power and trust have gained empirical support from experiments with taxpayers (Hofmann, Gangl, Kirchler, & Stark, 2014). Taxpayers were asked to imagine a tax authority in a fictitious country wielding either low versus high coercive power or low versus high legitimate power as well as a combination of low versus high coercive and legitimate power. Results showed that coercive power as well as legitimate power and its combination ensure high tax compliance. Additionally, the results support the assumption that the coercive power of authorities as well as perceived low or high legitimate power might determine whether an interaction climate is perceived as antagonistic or synergistic (Hofmann, Gangl, Kirchler, & Stark, 2014). These results highlight the practical value of high coercive power in combination with high legitimate power. In combination with legitimate power, coercive power seems to be perceived as a targeted safeguard of cooperation rather than a hostile threat, as protective power as described in the survey and in Table 1. Therefore, it is recommended that tax authorities enhance legitimate power by establishing professional and comprehensible tax procedures, web and telephone services and by having competent, motivated, and friendly tax officers to assist taxpayers (Alm & Torgler, 2011).

The attempt to describe tax behavior as a consequence of the relationship between tax authorities and taxpayers represents the latest development which has fueled research in tax psychology. The benefits of this approach are twofold. First, existing research on economic and psychological determinants of taxpaying behavior has been integrated. Second, theoretical and practical conclusions can be drawn and tested as to how a change in

interaction climate between tax authorities and taxpayers can be accomplished in order to foster voluntary and committed tax compliance.

5. Conclusion: From command and control to cooperative relationships

Traditionally, tax authorities applied a command and control approach to enforce taxpayers' cooperation, assuming that all taxpayers would otherwise evade taxes. However, there is hope that tax authorities can move on to establishing a cooperative relationship with taxpayers. In doing so, tax authorities avoid seeing taxpayers as potential criminals but instead as customers and partners. Tax authorities invest in their service provision and improve their assistance to reduce the time and effort required for taxpayers to comply with the law. Taxpayers, on the other hand, are believed to reciprocate this cooperative approach in the form of positive attitudes towards taxes and increased tax compliance.

Currently, tax authorities in countries such as the Netherlands, the Scandinavian countries, Austria, Slovenia, and New Zealand are expanding their approaches to include trust-building measures to build a confidence climate with "enhanced relationships" (OECD, 2013). According to the OECD, the concept of enhanced relationships requires tax authorities to dispense with audits of committed taxpayers going back several years. Instead, the tax authorities should resolve and settle uncertainties on the tax issues of a taxpayer immediately. On the other hand, taxpayers are required to fully disclose their tax files to the tax authorities and to sign a voluntary code in which they agree to not engage in aggressive tax planning (OECD, 2013). For both tax authorities and taxpayers, such an arrangement involves trust which can be harmed; however, it pays off in the form of lower auditing costs for the tax authorities and in enhanced planning reliability for the taxpayer.

Measures to increase voluntary and committed tax compliance are more important than ever. Tax avoidance among globally operating corporations has grown to a giant problem overshadowing tax evasion (Garside, 2014). These global players do not evade taxes but legally avoid taxes through aggressive tax planning. Hence, classical command and control approaches fail to enforce cooperation. Research needs to further examine how the willingness of taxpayers to refrain from exploiting tax havens and to follow the spirit of the law rather than the letter of the law can be increased.

Future research on tax behavior needs to recognize even more that tax behavior is embedded in the social world and includes many actors. Thus, not only the role played by other taxpayers or by the tax authorities needs to be examined but also the impact of the government or of tax practitioners on individual tax decision-making. Likewise, more

clarification is needed as to the cognitive and emotional processes involved in tax evasion, tax avoidance, or perceived fairness of the tax system. How do the self-employed mentally account for and represent the tax decision, and what emotions are involved when they decide to cheat or to avoid taxes? Tax research in the past has focused on income tax compliance. Future research needs to go beyond that and should theoretically and empirically analyze the determinants of compliance with other taxes, such as VAT or inheritance tax. Furthermore, the effects of tax amnesties on perceived fairness of the system among honest taxpayers versus the effects of integrating former tax evaders back into the formal system needs further examination.

Democratic societies depend on the voluntary tax compliance of their citizens in order to be able to afford public goods. Psychological tax research shows that dealing with taxpayers on equal footing might not only reduce negative attitudes towards paying taxes but might also increase the number of taxpayers who feel like responsible citizens willing to actively engage in their society.

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Publication 2

Hartl, B., Hofmann, E., Gangl, K., Hartner-Tiefenthaler, M., & Kirchler, E. (2015). Does the Sole Description of a Tax Authority Affect Tax Evasion? - The Impact of Described Coercive and Legitimate Power. *Plos One*, 10(4), e0123355. doi: 10.1371/journal.pone.0123355

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.

Keywords tax authority, belief, fine rate, coercive power, legitimate power, tax evasion, reciprocity

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 $I_H = I - t \times I$. 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, then all unreported income can be discovered and the audit results in a payment of a fine at rate f . The income I_C therefore equals $I_C = I - f \times (t \times I)$. When taxpayers have not reported any income to the tax authority and no audit takes place, then they end up with an income of $I_N = I$. Taxpayers are therefore assumed to choose between a sure loss (paying honestly, $E(I_H) = I - t \times I$) or the probability of a gain or a major loss according to the expected utility function of $E(I) = p(I_C) + (1-p)(I_N)$.

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 originates 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, $M[\text{age}] = 23.96$, $SD = 5.92$) 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 20th 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, $\beta = -.04, t(106) = -0.55, p = .58$ and 1 time and 2 times the evaded amount, $\beta = .02, t(106) = 0.32, p = .75$. 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, $\beta = .83$, $t(105) = 2.19$, $p = .03$ and significant main effect of legitimate power, $\beta = .65$, $t(105) = 2.37$, $p = .02$, 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.

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.

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		

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, $M[\text{age}] = 24.48$, $SD = 5.85$) 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 coercive 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.

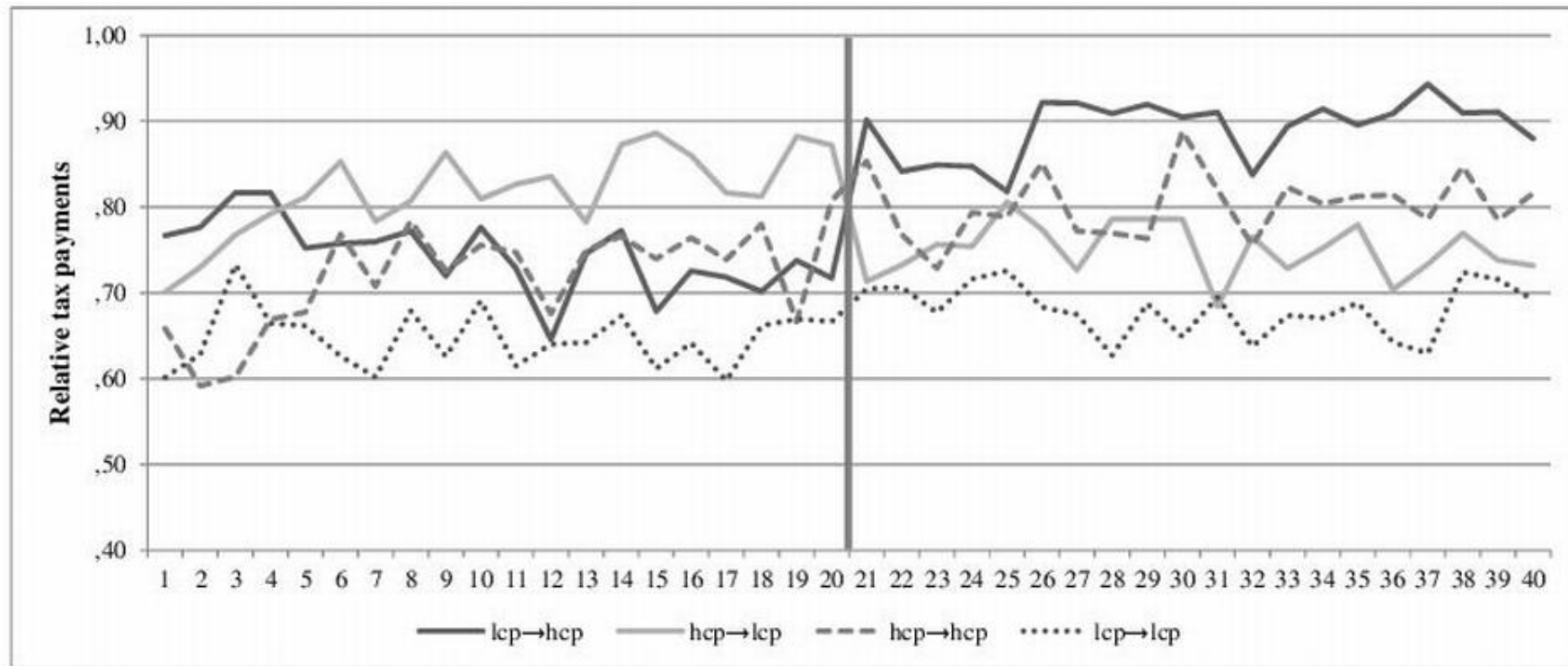
Coercive power on tax evasion. To test whether coercive power has an impact on tax payments, again a repeated measure regression was conducted, analyzing all 40 periods of taxpaying. The model with all variables significantly predicts tax payments, $F(26, 119) = 5.10, p < .001, R^2 = .15$. As expected, 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.

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

Predictor	Experiment					
	Experiment 2		Experiment 3		Experiment 4	
	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. ** $p < .01$, *** $p < .001$

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

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 ($lcp \rightarrow hcp$, $hcp \rightarrow lcp$, $lcp \rightarrow lcp$, $hcp \rightarrow hcp$), $F(3, 116) = 3.52$, $p = .02$, $\eta_p^2 = .08$. But post hoc tests show that the comparison of the relevant experimental and control conditions in the second sequence ($lcp \rightarrow hcp$ versus $hcp \rightarrow hcp$, $hcp \rightarrow lcp$ versus $lcp \rightarrow lcp$) 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 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, $M[\text{age}] = 24.40$, $SD = 4.89$) 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.

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) $\rightarrow$ high legitimate power (hlp), $hlp \rightarrow llp$; two control conditions: $llp \rightarrow llp$; $hlp \rightarrow hlp$), 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.

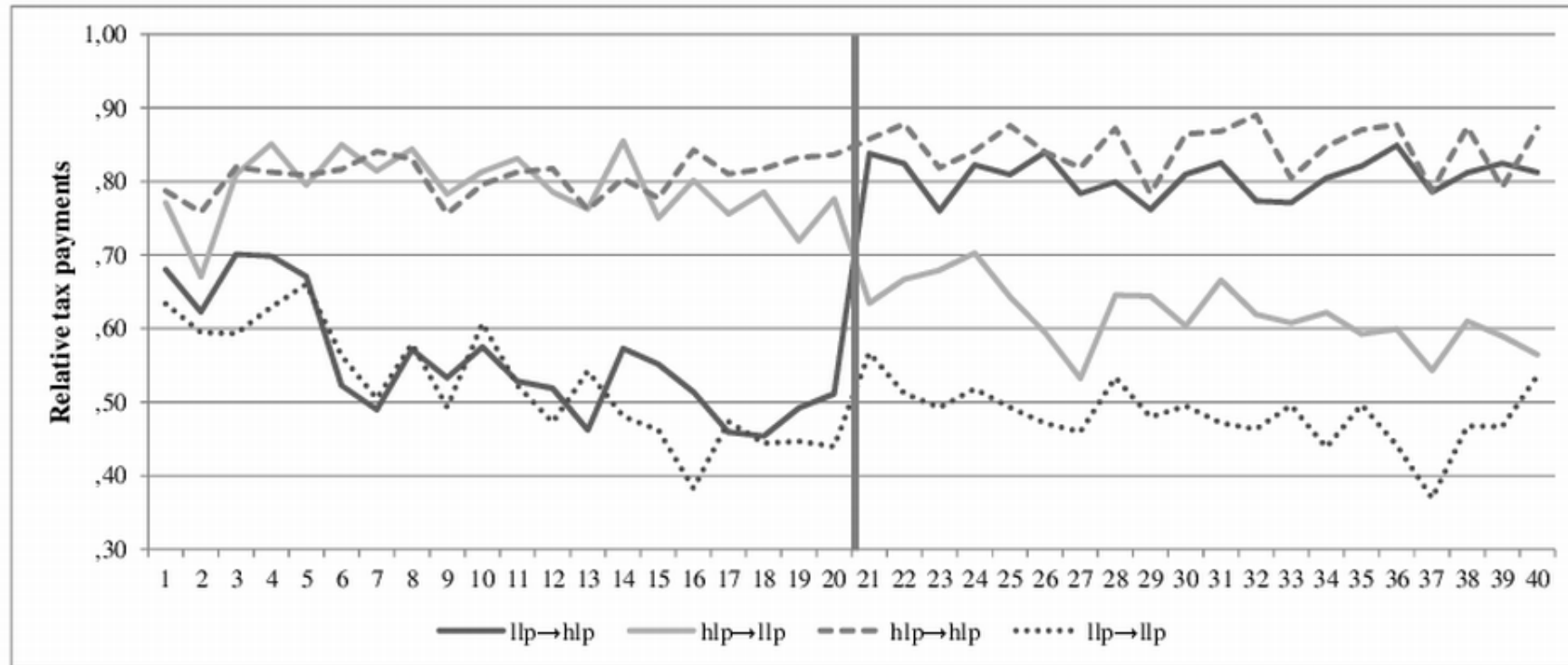
Similar to Experiment 2, the power of the tax authority changed in the experimental conditions during the life as taxpayers from low/high legitimate power to high/low legitimate power (Table 1).

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 taxpaying (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.

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

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 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, $M[\text{age}] = 24.26, SD = 5.56$) 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

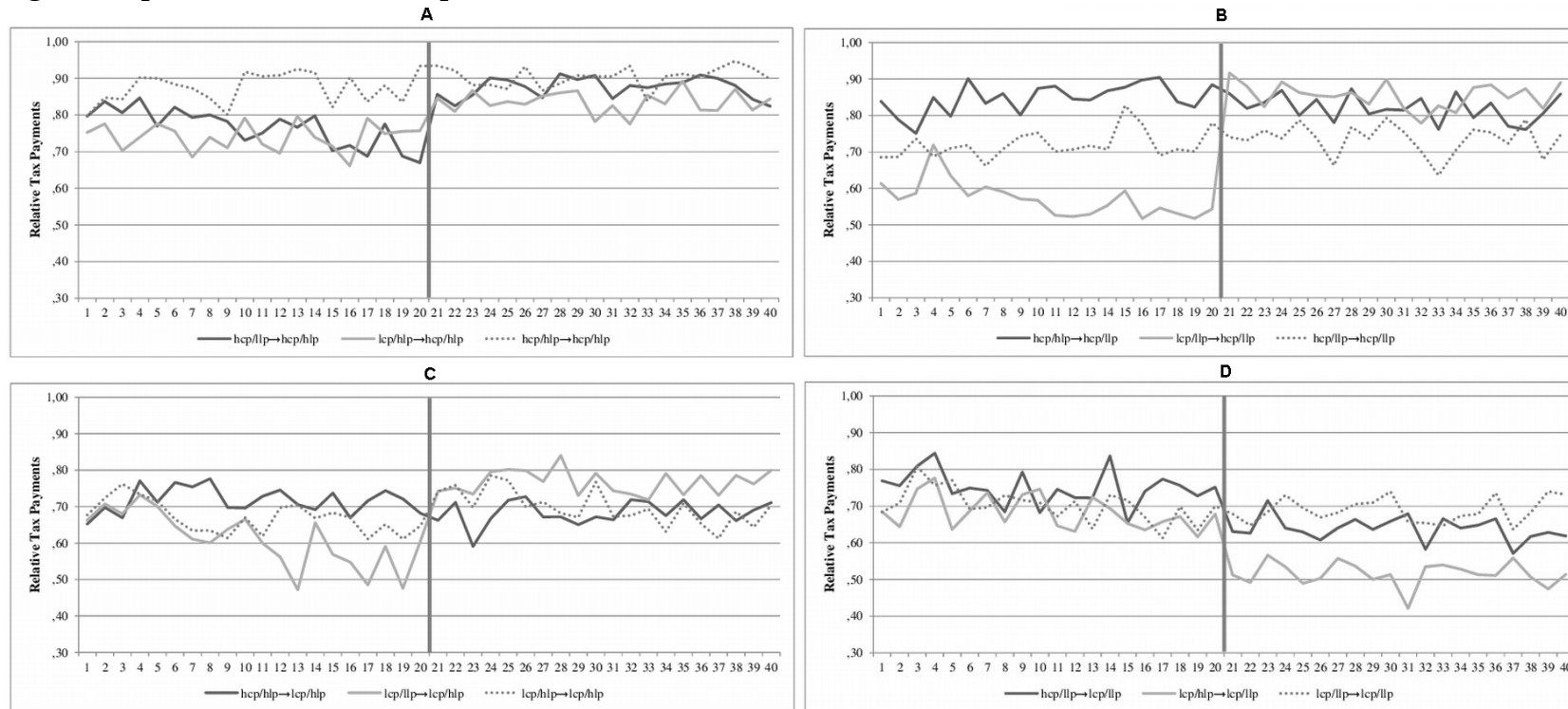
Coercive and legitimate power on beliefs. A repeated measure regression ($F(34, 367) = 40.74, p < .001, R^2 = .63$) reveals a significant main effect of intensity of coercive power, $\beta = .77, t(367) = 25.44, p < .001$ and a significant main effect of sequence, $\beta = .07, t(367) = 3.77, p < .001$. 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-d provide an overview of the relative tax payments in all 40 rounds, grouping together the experimental conditions with the corresponding control conditions.

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

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 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.

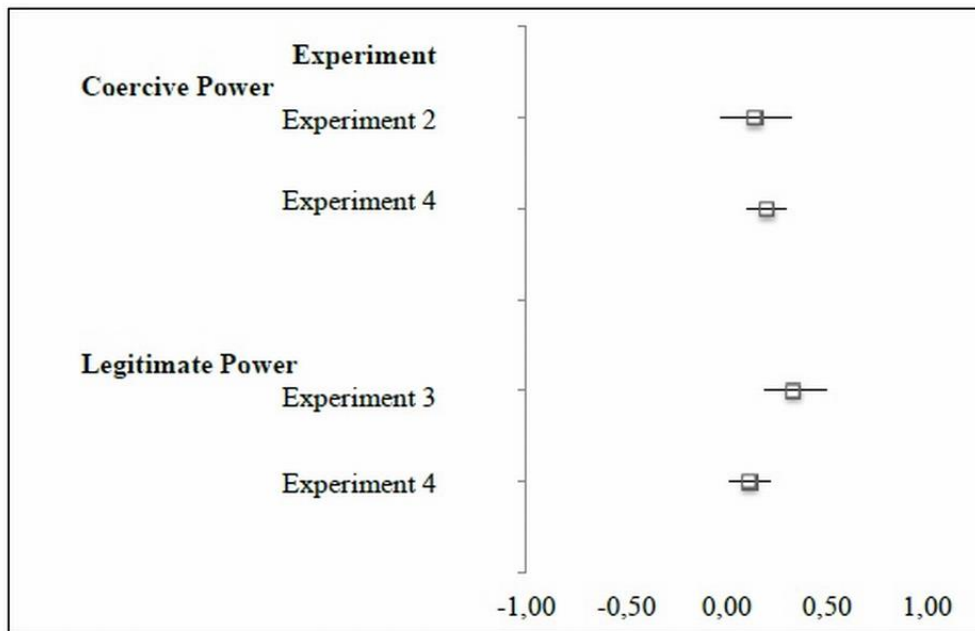
General discussion

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.

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).

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



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].

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Publication 3

Gangl, K., Hofmann, E., Hartl, B., & Kirchler, E. (in press). Power of Authorities and Trust in Authorities Determine the Interaction Climate and Tax Compliance. In L. Oats & D. Salter (Eds.), *Taxation. In Memoriam Tim Vollans*.

Abstract

Taxpayers differ in their tax compliance depending on the interaction climate between tax authorities and taxpayers. The present study investigates mechanisms underlying the interaction climate - such as power of authorities and taxpayers' trust in authorities – resulting in enforced compliance, voluntary co-operation or committed co-operation. Results show that enforced compliance depends on coercive power whereas voluntary co-operation depends on legitimate power of tax authorities. Committed co-operation was found to originate in a confidence climate which is characterized by mutual implicit trust and a moral obligation to co-operate. Concluding theoretical and practical implications are presented, on how to strengthen taxpayers' voluntary and committed co-operation.

Introduction

Tax authorities influence tax compliance of citizens in various ways. According to the Slippery Slope Framework, tax authorities applying power measures enforce tax compliance whereas tax authorities who are trusted by the taxpayers gain voluntary co-operation (Kirchler, 2007; Kirchler, Hoelzl and Wahl, 2008). Power deals with pressure through audit probabilities and fines (Allingham and Sandmo, 1972; Blackwell, 2010), whereas trust originates in perceived benevolence of the authorities, transparency and fairness of tax law, tax collection procedures, and tax burden (Braithwaite, 2003b; Wenzel, 2002, 2004). The Slippery Slope Framework treats power and trust as independent dimensions determining taxpayers' behavior. The extended Slippery Slope Framework, however, takes into account the dynamics between power and trust that result in different interaction climates between tax authorities and taxpayers and different forms of tax compliance (Gangl, Hofmann, Pollai and Kirchler, 2012). This chapter empirically tests the extended Slippery Slope Framework by analyzing the dynamics between power and trust underlying the interaction climates and enforced compliance, voluntary and committed co-operation.

The extended Slippery Slope Framework differentiates between different qualities of power and different qualities of trust (Gangl et al., 2012). Departing from the theory of bases of social power (French and Raven, 1959; Pierro, Raven, Amato and Bélanger, 2012; Raven, Schwarzwald and Koslowsky, 1998)¹ the framework distinguishes between coercive power and legitimate power. While coercive power is manifested through severe controls and punishment of tax evaders and rewarding of cooperative tax behavior, legitimate power means that authorities are accepted as legitimized to give orders and are perceived as holding expertise and behaving professionally when providing information and establishing rules of conduct. Trust is defined in the context of socio-cognitive trust theory and differentiated into reason-based trust and implicit trust (Castelfranchi and Falcone, 2010). Reason-based trust means that the tax authorities are trusted because they pursue relevant goals, because

¹ Raven, Schwarzwald and Koslowsky (1998) call coercive power “harsh power” and legitimate power is called “soft power”. We stick to the terminology of regulation theory and use the terms coercive power and legitimate power (Tyler, 2006).

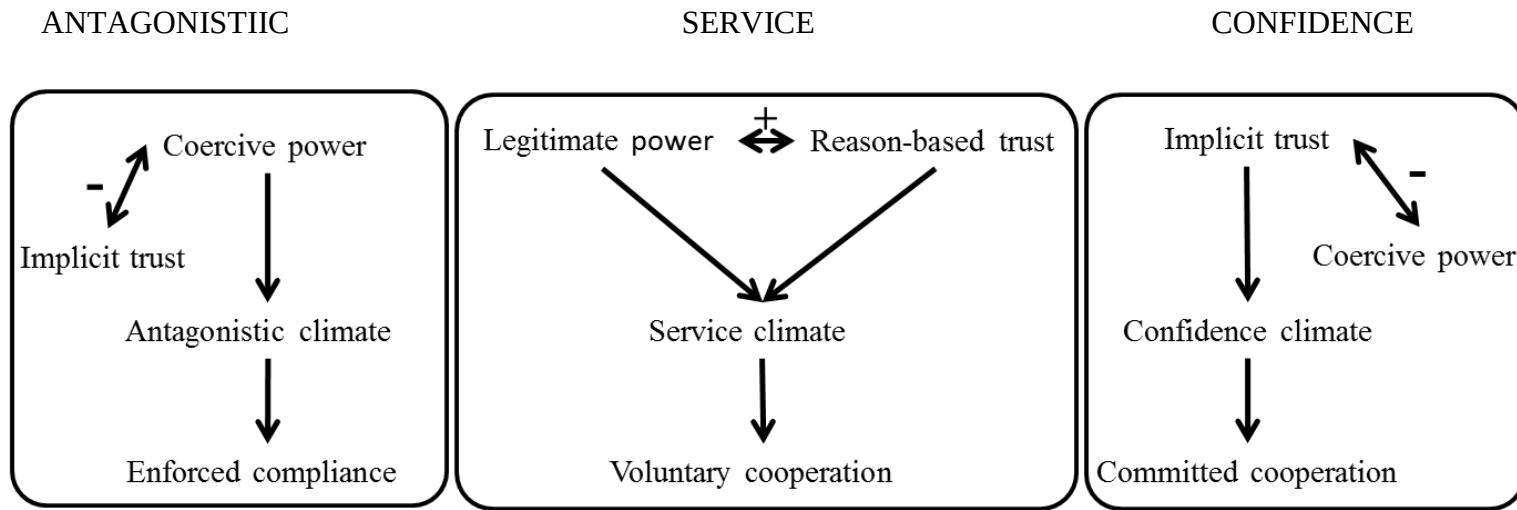
taxpayers depend on the authorities, because the authorities appear competent and benevolent, and because the authorities are supported but not hindered in reaching their goal. In contrast, implicit trust is defined as an automatic and unconscious trust reaction to the perception that the tax authorities are part of one's own community, sharing one's own values.

The dynamics between coercive and legitimate power and reason-based and implicit trust lead to three types of interaction climates. Coercive power results in an antagonistic interaction climate and erodes implicit trust. The tax authorities treat taxpayers as potential criminals who must be forced to comply with the law. In turn, taxpayers feel prosecuted and feel the need to hide from the tax authorities (Braithwaite, 2003a; Feld and Frey, 2002). Overall, willingness to co-operate is low and taxpayers only pay taxes if they cannot avoid it, thus, their compliance is enforced (see, Figure 1).

Legitimate power and reason-based trust are two sides of the same coin. Supportive and transparent procedures of authorities offer taxpayers reasons to trust in tax authorities. Together, legitimate power and reason-based trust lead to a service climate between tax authorities and taxpayers. In a service climate, tax authorities are perceived as a professional, rule-based institution which provides services to its clients, the taxpayers (Alm and Torgler, 2011; Braithwaite, 2003b). The tax authorities are not focused on detecting potential evaders but try to assist honest taxpayers in complying with the law (Braithwaite, 2003a). In turn, taxpayers are convinced that the authorities are benevolent as long as taxpayers co-operate. As a consequence, taxpayers are voluntarily motivated to follow the rules of the law (see, Figure 1).

Implicit trust is assumed to lead to a confidence climate where taxpayers are committed to co-operate and coercive power is unnecessary. Tax authorities and taxpayers have a common purpose and common values and interact with empathy. Tax authorities trust taxpayers as responsible citizens and avoid coercive measures. Taxpayers perceive the tax authorities as a partner as well as a high social norm of tax honesty among their fellow citizens (Alm and Torgler, 2011). They not only follow the letter of the law but the spirit of the law and see tax paying as a moral obligation (Braithwaite, 2003a). In a confidence climate, taxpayers are committed to co-operate (see, Figure 1 below).

Figure 1: Dynamics between power and trust and resulting interaction climate and tax compliance according to the extended Slippery Slope Framework



The dynamics between qualities of power and qualities of trust allow conclusions on the transformation from one interaction climate to another (Gangl et al., 2012). An increase of legitimate power by the tax authorities is assumed to foster reason-based trust and to be a precondition for the perception of a service climate and voluntary cooperation. Positive long term experience and routine with the legitimated and trusted authorities are likely to transform a service climate into a confidence climate. However, the confidence climate based on implicit trust might be destroyed by the introduction of coercive power measures (Feld and Frey, 2002; Gangl et al., 2012).

The assumptions of the Slippery Slope Framework about the effect of power of tax authorities and trust in tax authorities on tax compliance has received empirical support (Kogler et al., 2013; Muehlbacher, Kirchler and Schwarzenberger, 2011; Wahl, Kastlunger and Kirchler, 2010). Empirical findings on the extended Slippery Slope Framework, however, are rare (Hofmann, Gangl, Kirchler and Stark, 2013). Insights into the dynamic between power and trust may enhance the understanding of enforced compliance, voluntary cooperation, and committed cooperation. In the following part of this chapter, the method and results of the present study are presented.

Method

Sample

The sample consisted of 132 taxpayers (60% male; on average 39.26 [$SD = 17.60$] years old). The majority of the sample was employed (68.2%), 14.4% were self-employed, 7.6% were in education, 6.8% were retired, 2.3% were unemployed, and 0.8% were on maternity leave. About two thirds of participants reported a monthly net income of 1,001 to 2,000 Euro (35.6%); 22.7% reported an income of 2,001 to 3,000 Euro, and 25% an income higher than 3,000 Euro; 16.7% reported an income below 1,000 Euro. About half of the participants had a university degree (49.2%); 28.0% had a high school degree, 9.8% a degree from a vocational school, 9.8% a vocational training certificate, 0.8% had a secondary degree, and 2.3% indicated other degrees. Participants were mostly from Austria (81.1%) and Germany (15.2%). About 60% employed no tax practitioner; 22% used a practitioner occasionally, and 17.4% employed a tax practitioner regularly. Participants indicated having

some experience with the tax authorities ($M = 2.51$, $SD = 0.69$; scale ranging from 1=no experience to 4=high experience).

Material

In an online questionnaire 10 concepts and socio-demographic characteristics were assessed. The concepts were (a) *perceived coercive power* with two sub-dimensions (punishment and reward power; six items), (b) *perceived legitimate power* with four sub-dimensions (legitimate power, expert power, information power and referent power; 13 items), (c) *reason-based trust* with four sub-dimensions (shared goals, dependency, internal factors [competence, motivation, and benevolence], external factors [external opportunities and dangers] 14 items), and (d) *implicit trust* with one dimension (three items). The scales (e) *perceived antagonistic climate* (three items), (f) *perceived service climate* (three items), (g) *perceived confidence climate* (three items), (h) *enforced compliance* (four items), (i) *voluntary co-operation* (four items), and (j) *committed co-operation* (four items) were assessed by one sub-dimension each. As socio-demographics, sex, age, occupation, income, country of residence, use of tax practitioners, and experience with tax authorities were assessed. All items, factor loadings, and scale reliabilities as well as inter-correlations can be found in the Appendix.

Procedure

The questionnaire was presented online. A link to the online questionnaire was posted in discussion forums of Austrian newspapers asking readers to fill out a questionnaire on the perception of tax authorities. The first item in the questionnaire was a filter item in order to ascertain whether they had paid taxes in the past. Only those participants who indicated that they had experiences with tax paying were allowed to continue with the questionnaire, all others were thanked and debriefed without filling out the questionnaire.

Table 1: Inter-correlations of scales

	2	3	4	5	6	7	8	9	10	11
1. Coercive power	-.19*	-.11	-.28**	-.29**	.35***	-.24**	-.23**	.39***	-.11	-.21*
2. Reward power		.49***	.49***	.17	-.17	.31***	.43***	-.13	.40***	.18*
3. Legitimate power		1	.61***	.27**	-.26**	.52***	.57***	-.15	.44***	.37***
4. Reason based trust				.45***	-.38***	.57***	.70***	-.13	.49***	.50***
5. Implicit trust					-.29**	.27**	.39***	-.27**	.24**	.30***
6. Antagonistic climate						-.23**	-.39***	.48***	-.07	-.44***
7. Service climate							.68***	-.04	.48***	.28**
8. Confidence climate								-.16	.46***	.45***
9. Enforced compliance								.	.03	-.36***
10. Voluntary compliance										.29**
11. Committed co-operation										

Note: %, Pearson correlations. *, **, *** represent statistical significance at the $p < .05$, $p < .01$, $p < .001$ levels, respectively. Coercive power includes only items on punishment

Results

To test the dynamics between power and trust and the resulting interaction climates, structural equation modeling was conducted (SEM analysis, Byrne, 2001). We tested the three models displayed in Figure 1, which we call antagonistic model, service model, and confidence model. For each of these models adjusted versions were estimated as well to identify the model which best fits the data.

To test the antagonistic model, we analyzed whether a negative relationship between coercive power and implicit trust exists which leads to an antagonistic climate that, in turn, induces enforced compliance. As the scale coercive power consists of two sub-dimensions (punishment power and reward power) the items belonging to each dimension were averaged to use the two dimensions as parcel scores in place of item scores in the analysis (Bandalos, 2002). The estimated Model A, displayed in Table 2 and in Figure 2 below, has good fit indices, indicating that the model is matching the data. About 42% of variance of the antagonistic climate and about 27% of variance of enforced compliance can be explained by the model. However, the two dimensions of coercive power, punishment and reward, have different impacts. Whereas coercive power is increased by punishment power ($\beta = .58, p < .01$), it is diminished by reward power ($\beta = -.34, p < .01$). This indicates that reward power assesses a different concept than punishment power. As a consequence, we adjusted the model estimations by omitting the reward power dimension and estimate coercive power only through three items measuring perceived punishment of the tax authorities. The resulting Model B (see, Table 2 and Figure 2 below) has also good fit indices and matches the data well (antagonistic climate: $R^2 = .19$; enforced compliance: $R^2 = .27$). Additionally, we estimated another adjusted Model C, in which we added direct relations between implicit trust and the antagonistic climate and coercive power and enforced compliance (see, Figure 2 below). Model C captures the theoretical assumption that there is no implicit trust in the antagonistic climate and also shows that the direct relationship between coercive power and enforced compliance ($\beta = .47, p < .01$) is not totally mediated through the perception of an antagonistic climate. Model C has good fit indices indicating that this model matches the data well (antagonistic climate: $R^2 = .21$; enforced compliance: $R^2 = .35$). Comparing all estimated models, Model C seems to have the best fit to explain the mechanism behind the antagonistic climate and enforced tax compliance (see, Table 2).

Figure 2: Structural equation models of the antagonistic model

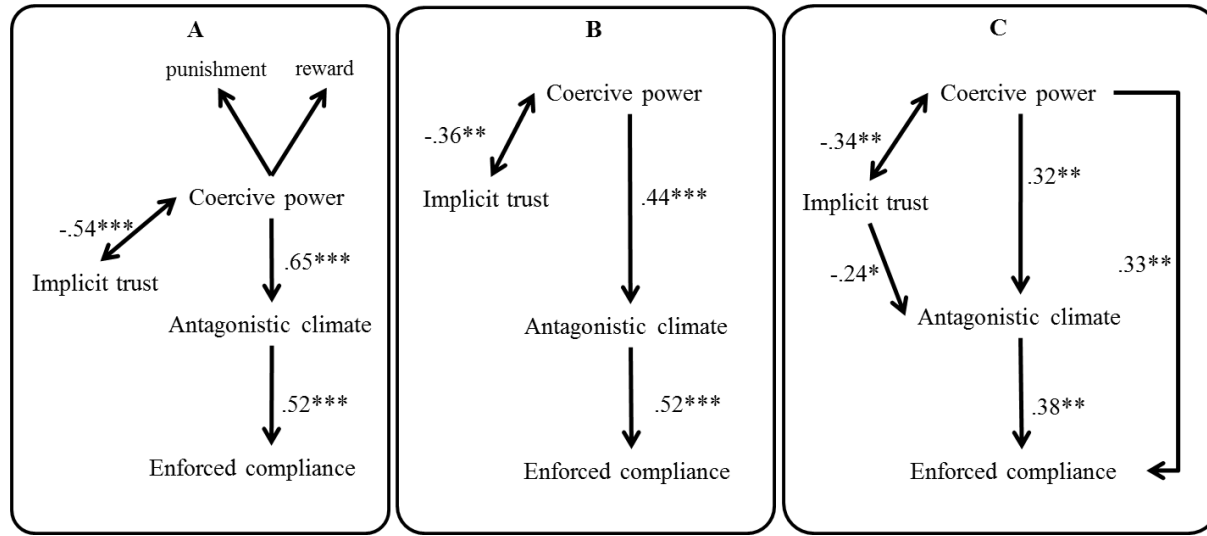


Table 2: Model fit indices of the antagonistic model

Antagonistic model	χ^2	<i>df</i>	<i>p</i>	χ^2/df	<i>CFI</i>	<i>RMSEA</i>
A	71.61	51	.03	1.40	.98	.06
B (without reward power items)	95.18	62	.004	1.54	.97	.06
C (with direct relations)	77.69	60	.06	1.30	.98	.05

To test the service model we analyzed whether a positive relationship between legitimate power and reason-based trust leads to a service climate and in turn to voluntary co-operation. As the scales legitimate power and reason-based trust consist of four sub-dimensions each, the items of each sub-dimension were averaged to use these sub-dimensions as parcel scores in place of item scores in the SEM analysis (Bandalos, 2002). Based on theory, we additionally allowed a correlation of the errors between expert power and information power for the scale legitimate power. In the Model A displayed below in Figure 3, legitimate power and reason-based trust correlate with $\beta = .90$, in turn, the path between legitimate power and service climate exceeds 1 and the path between reason-based trust and service climate becomes negative indicating a specification error and, thus, implies a modification of the model (Dillon, Kumar and Mulani, 1987). Although this model explains 81% of variance of service climate and 47% of variance of voluntary co-operation, the model fit indices indicate a bad fit of the model to the data (Table 3). Assuming multicollinearity between legitimate power and reason-based trust, a model was estimated in which only legitimate power or reason-based trust is estimated as a predictor. Whereas the model with legitimate power (Model B) explains 81% of variance of service climate and 45% of variance of voluntary cooperation with a good fit (see, Table 3 below), the model with reason-based trust (Model C) explains only 57% of variance of service climate and 45% of variance of voluntary cooperation. Comparing Models A, B, and C indicates that legitimate power as well as reason-based trust explain the service climate and voluntarily cooperation. However, Model B with legitimate power has the overall highest explanatory power. If we additionally add a direct relation between legitimate power and voluntary co-operation, as depicted in Model B.1 again a specification error occurs (probably due to multicollinearity, the path between legitimate power and voluntary co-operation exceeds 1). Model B.1 has a good fit as well and explains 74% of variance of service climate and 75% of variance of voluntary co-operation. Additionally, this model indicates that the mechanism through which legitimate power impacts voluntary co-operation is direct ($\beta = .84, p < .01$) via the mediation through the perception of a service climate. Comparing all models, Model B seems to explain the service climate and voluntary co-operation more accurately than the other models (see, Table 3).

Figure 3: Structural equation models of the service model

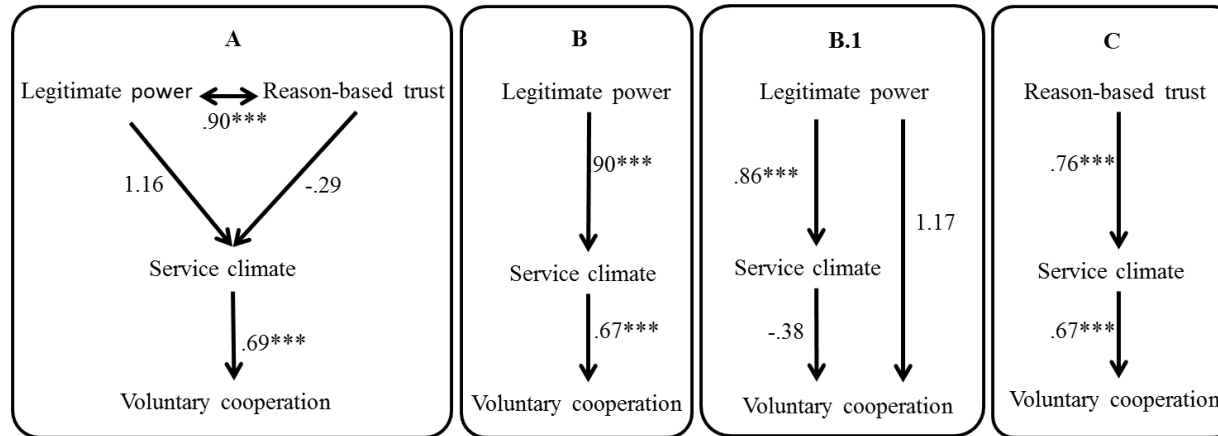


Table 3: Model fit indices of the service model

Service model	χ^2	df	p	χ^2/df	CFI	RMSEA
A (original)	190.38	85	.000	2.24	.88	.10
B (legitimate power)	68.50	41	.005	1.67	.95	.07
B.1 (legitimate power plus direct relation) ^a	55.11	40	.06	1.38	.97	.05
C (reason-based trust) ^b	91.59	42	.000	2.18	.93	.10

Note: ^a For exploratory reasons, in another adjusted Model B.2, we included reward power as a sub-dimension of legitimate power to the analysis. The model has a marginally good fit ($\chi^2(50) = 81.71$, $\chi^2/df = 1.38$, $CFI = .94$, $RMSEA = .07$) and explains 58% of the variance of the service climate and 61% of the variance of voluntary co-operation. ^b For exploratory reasons, in another adjusted Model C.1, we included a direct relation between reason-based trust and voluntary co-operation. The model has a bad fit ($\chi^2(41) = 81.89$, $\chi^2/df = 2.00$, $CFI = .94$, $RMSEA = .09$) and explains 52% of the variance of the service climate and 49% of the variance of voluntary co-operation.

To test the confidence model we analyzed whether the negative relationship between implicit trust and coercive power exists and leads to a confidence climate that in turn, induces committed co-operation. As shown in the analyses of the antagonistic climate model, the sub-dimension reward power correlates negatively with the scale coercive power ($\beta = -.35, p < .01$) thus, does not fit with the scale coercive power. However, Model A (see, Table 4 and Figure 4 below) has a good model fit (confidence climate: $R^2 = .19$; committed cooperation: $R^2 = .25$). In the adjusted Model B, coercive power only composes punishment items leading to a good fit (confidence climate: $R^2 = .19$; committed cooperation: $R^2 = .25$). Also Model C, in which a direct relation between implicit trust and committed co-operation and between coercive power and the confidence climate is added, has a good fit (confidence climate: $R^2 = .19$; committed co-operation: $R^2 = .25$). Model C indicates that the direct relation between implicit trust and committed co-operation ($\beta = .33, p < .001$) is totally mediated by the perception of a confidence climate. Comparing all models indicates that Model C overall describes the mechanism behind the confidence climate and committed co-operation best (see Table 4).

Discussion

Taxpayers differ concerning their compliance to pay taxes. Understanding how these differences emerge allows us to determine how tax authorities' may increase voluntary and committed co-operation. The present study confirms the assumptions of the extended Slippery Slope Framework and, empirically, shows how the dynamic between coercive and legitimate power and implicit, namely reason-based trust determines three distinct interaction climates and enforced compliance, voluntary and committed co-operation (Gangl et al., 2012).

Results show that coercive power of tax authorities erodes implicit trust of taxpayers, a dynamic, which is associated with an antagonistic interaction climate and enforced compliance. Although the perception of coercion is a determining factor of the antagonistic climate, enforced compliance is a direct consequence of perceived tax authorities' coercive measures and not mediated via the antagonistic relationship between authorities and taxpayers.

Figure 4: Structural equation models of the confidence model

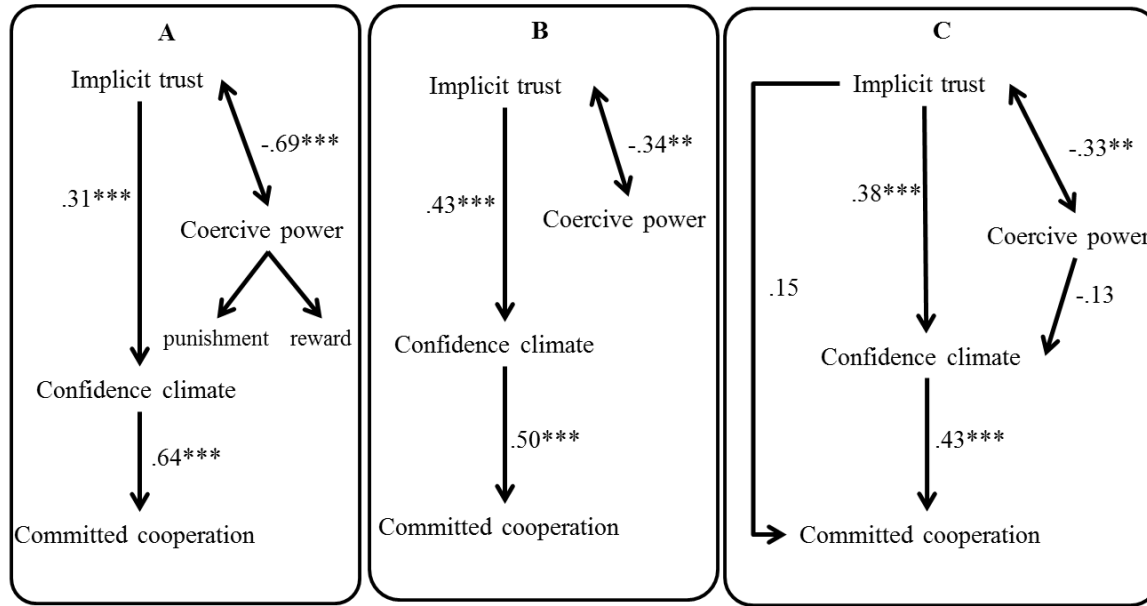


Table 4: Model fit indices of the confidence model

Confidence model	χ^2	df	p	χ^2/df	CFI	$RMSEA$
A (original)	81.00	51	.005	1.59	.97	.07
B (without reward items)	74.91	62	.13	1.21	.99	.04
C (with direct relations) ^a	70.86	60	.16	1.18	.99	.04

The positive dynamic between legitimate power and reason-based trust is related to a service climate and voluntary co-operation. Interestingly, results indicate that legitimate power of tax authorities, rather than reason-based trust, is the characterizing factor in the service model. Reason-based trust explains the service climate as well, but not as well as legitimate power. Analysis shows that legitimated authorities directly impact voluntary co-operation of taxpayers as well as trust in the authorities and the perception of a service climate.

As expected, the negative dynamics between implicit trust and coercive power are the prevailing mechanism behind the confidence climate which, in turn, is determining committed tax co-operation. In contrast to enforced compliance and voluntary co-operation, committed co-operation is based on the mediation via the interaction climate, thus the relation between tax authorities and taxpayers. Hence, the current study shows, that enforced compliance and voluntary co-operation result from the tax authorities' direct characteristics perceived as deterring or professional, whereas committed co-operation results from the interaction climate between the tax authorities and the taxpayers stemming from implicit trust.

The inter-correlations among all present scales illustrate the opposition between mechanisms determining the antagonistic model and the confidence model and, on the other hand, how the mechanisms of the service model are compound with those of the confidence model. Hence, the transformation to a confidence climate and committed co-operation seems to depend on the presence of a service climate and voluntary co-operation (Gangl et al., 2012). In the service climate, interactions are initially based on legitimate power and careful consideration about the others' trustworthiness. However, they might become automated with routine and repeated interaction (Castelfranchi and Falcone, 2010; Nooteboom, 2002). Thus, the transformation from an antagonistic climate to a service climate implies a reduction of tax authorities' perceived deterrence measures and an increase of tax authorities' assistance activities. A transformation from a service climate to a confidence climate, however, depends on time and a relationship of mutual trust based on positive experience and familiarization of the taxpayers with the legitimated authorities (Gangl et al., 2012). To test these assumptions on the transformation from one climate of interaction to another climate of interaction, further longitudinal studies would be necessary.

Unexpectedly, results show that reward power is not part of the scale coercive power (Raven et al., 1998). Thus, that coercive power of authorities is based on punishments and not

rewards. However, as explorative analyses indicate, reward power also does not fit with legitimate power explaining a service climate and voluntary co-operation (see, Table 3). It can be concluded that reward power might define an own entity leading to a distinct quality of tax compliance. Existing literature on motivation suggests that rewards similar to punishments have the potential to crowd out the intrinsic motivation to co-operate (Frey and Jegen, 2001; Raven et al., 1998). However, it might be that the crowding out effect of rewards only occurs among taxpayers who paid taxes voluntarily beforehand but that taxpayers who feel enforced to comply, react positively to rewards offered for compliant behavior (Deci, Koester and Ryan, 1999). Further theoretical and empirical analyses are necessary to determine the differential effects of rewards on tax compliance.

The current study allows some practical conclusions. Tax authorities should avoid being perceived as coercive because this might lead to an antagonistic climate and enforced compliance. Coercive power erodes trust and voluntary or committed co-operation which makes more costly the coercive measures necessary to maintain at least a certain level of tax compliance (Kirchler et al., 2008). Trying to be perceived as a legitimated tax authority is advantageous concerning the interaction with taxpayers and a voluntary co-operation. However, whereas costs of audits might be reduced, the administrative costs of services increase (Gangl et al., 2012). Nonetheless, positive experiences in the service climate and a trustful interaction might make taxpayers take on responsibility. An example for such an interaction between tax authorities and taxpayers is the horizontal monitoring initiative applied in some OECD countries (Stevens, Pheijffer, van den Broek, JKeijzer and van der Hel - van Dijk, 2012). The current results indicate that a co-operative interaction might cause taxpayers to perceive taxpaying as their moral obligation. Thus, in the confidence climate costly audits, but also costly administrative procedures, could be avoided.

The current study is the first empirical test of the assumptions of the extended Slippery Slope Framework, and, hence, on the impact of the dynamic between power and trust on the interaction climate and tax compliance. Although the current study allows some theoretical and practical conclusions, replications and extension of the current findings are needed with behavioral data. Further insights into the dynamic between power and trust may be utilized to improve the interaction between tax authorities and taxpayers and hence, increase voluntary and committed tax compliance.

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Publication 4

Gangl, K., Hofmann, E., de Groot, M., Antonides, G., Goslinga, S., Hartl, B., & Kirchler, E. (in press). Taxpayers' motivations relate to tax compliance: Evidence from two representative samples of Austrian and Dutch entrepreneurs. *Journal of Tax Administration*.

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 they fear 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 on data from two representative samples of 500 Austrian 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.

Keywords: slippery slope framework, enforced motivation, voluntary motivation, committed motivation, tax evasion

Introduction

Taxpayers differ in their motivation to pay taxes (Braithwaite, 2003a; Kirchler, Hoelzl, & Wahl, 2008). Whereas some might be motivated to pay taxes because they fear 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 contradicting (Hartner, Rechberger, Kirchler, & Schabmann, 2008; Kirchler & Wahl, 2010). 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 entrepreneurs in order to determine the relevance of taxpayers' motivations for tax authorities' policies.

The slippery slope framework differentiating originally between enforced and voluntary motivation (Kirchler, 2007; Kirchler et al., 2008) after an extension, 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 interest (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 even may 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 by them. 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 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 Austrian entrepreneurs indicated that both voluntary and committed motivations are positively related to tax compliance (Kirchler & Wahl, 2010). No relation between enforced motivation and tax compliance was found (Kirchler & Wahl, 2010). In contrast, in two survey studies, conducted among more than 2000 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 pursue to gain robust results by conducting two studies in countries, which are similar concerning tax compliance measured by the degree of the shadow-economy (Buehn & Schneider, 2012). Further, to gain results with high external validity we used representative samples of entrepreneurs. In contrast to employed taxpayers whose taxes are often deducted by the employers, entrepreneurs 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 Austrian entrepreneurs. 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 entrepreneurs representative for the Austrian population of entrepreneurs 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 Austrians entrepreneurs 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 $\alpha = .77$, $M = 5.44$, $SD = 1.11$). Scales to measure tax motivations were adapted from Hofmann et al. (2014). Enforced compliance was assessed with 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 $\alpha = .87$). Voluntary cooperation was also assessed with 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 $\alpha = .79$). 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 $\alpha = .92$; $M = 5.04$, $SD = 1.56$). All questions on tax motivations were assessed on seven-point Likert scales with labeled endpoints 1 (*I totally disagree*) and 7 (*I totally agree*).

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 indicated 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).

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

	<i>f</i> / <i>M</i> (<i>SD</i>)	Block 1	Block 2	
		β	β	<i>r</i>
Female	49.0%	.11*	.10*	.08
Age	44.46 (10.55)	.19***	.16***	.18***
Low education	2.6%	-.02	-.02	-.04
Medium education	66.8%	.04	.04	.02
0- 25,000 Euro turnover	35.6%	.00	.03	.02
25,001– 50,000 Euro turnover	26.2%	-.01	-.00	.01
50,001 – 100,000 Euro turnover	15.0%	.00	-.01	.01
100,000 – 1,000,000 Euro turnover	18.0%	-.05	-.06	-.04
1-4 employees	19.2%	.05	.05	.02
5-49 employees	5.2%	.02	.02	-.01
50 < employees	0.4%	-.07	-.04	-.09
Information technology	10.6%	.01	.00	-.04
Tourism	7.0%	-.03	-.01	-.04
Creative industries	6.4%	.02	.01	.01
Education	5.8%	.10*	.08*	.10*
Financial services	5.6%	.06	.10	.06
Consulting & engineering	3.2%	-.01	-.04	-.01
Enforced motivation	3.83 (1.61)		-.13***	-.15**
Voluntary motivation	3.56 (1.43)		.04	.05
Committed motivation	5.04 (1.56)		.47***	.48***
R^2		.07	.31	
ΔR^2			.23***	
<i>F</i>		2.18**	10.55***	
ΔF			53.91***	
<i>Max. VIF</i>		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 with tax compliance; 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.

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

	<i>f / M(SD)</i>	Block 1	Block 2	
		β	β	<i>r</i>
Female	31.7%	.01	.01	-.01
Age	48.67 (11.22)	.06*	.02	.06*
Low education	7.6%	-.00	.01	-.01
Medium education	41.8%	-.02	-.00	-.04
0- 25,000 euro turnover	28.5%	-.07	-.07	-.01
25,001– 50,000 Euro turnover	11.3%	-.04	-.04	.00
50,001 – 100,000 Euro turnover	12.1%	-.03	-.04	.01
100,000 – 1,000,000 Euro turnover	29.6%	-.08*	-.08*	-.04
1-4 employees	26.4%	-.19*	-.16 ⁺	.01
5-49 employees	19.1%	-.15 ⁺	-.13	-.01
50 < employees	2.7%	-.16*	-.14*	-.02
Financial services	26.9%	.07*	.07*	.09**
Retail	26.9%	.01	.01	.01
Health care	7.0%	-.01	-.01	-.01
Construction	6.4%	-.03	-.03	-.03
Agriculture	4.9%	-.08**	-.08**	-.10***
Something is taken from me	15.9%		-.11***	-.15***
I contribute something	37.5%		.09**	.14***
<i>R</i> ²		.03	.05	
ΔR^2			.03	
<i>F</i>		2.38**	4.14***	
ΔF			17.77***	
<i>Max. VIF</i>		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 with tax compliance; 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.

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.

Discussion

The present paper shows that different motivations to pay taxes correspond to different levels of reported tax compliance. As predicted, dismissive and enforced motivations related to negative feelings seem to correspond to lower tax compliance than committed motivations related to positive feelings (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 to be less tax compliant (Braithwaite, 2003a; Kirchler et al., 2008). They seem to pay taxes only if they are enforced 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 loop holes in tax law 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 to apply 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 for 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 auditing taxpayers 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.

Besides its merits the present paper has also some 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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Publication 5

Hofmann, E., Hartl, B., Gangl, K., Hartner-Tiefenthaler, M., & Kirchler, E. (submitted). The Impact of Organizations' Coercive and Legitimate Power on Trust, Relational Climates and Motivations for Cooperation.

Abstract

The execution of coercive and/or legitimate power of organizations assures continuous cooperation. While coercive power comprises severe punishment and strict monitoring, legitimate power covers legitimate, expert and informative procedures. Powers wielded by organizations stimulate specific psychological processes for cooperation: trust in the organization can either be reduced or increased, individuals can perceive relational climates interacting with the organization, and their motivations differ impacting the intention to cooperate. With four experimental studies the impact of coercive and/or legitimate power on trust, climates, and motivations for cooperation are investigated in respect to two organizations (tax office, insurance organization). Findings reveal that coercive power increases the perception of an antagonistic climate and enforced compliance, whereas legitimate power increases reason-based trust, the perception of a service climate, and voluntary cooperation. Coercive and legitimate power in combination yield similar results. Thereby, solely trust is mediating the relation between power and intended cooperation.

Keywords: coercive power, legitimate power, trust, relational climates, motivations to cooperate, cooperation

Introduction

“Power is to organization as oxygen is to breathing” (Clegg, Courpasson & Phillips, 2006, p. 3). Power plays a vital role for organizational actors since possessing power means being able to influence others more easily (Anderson & Brion, 2014). When studying power in organizations, not only individuals vary in the level of power they possess, but the organizations as a whole differ in executed power as organizational routines and practices constitute symbols for it.

Beliefs about power impact individuals’ trust in communal organizations, the relational climate as well as the individual motivation for cooperation (Gangl, Hofmann & Kirchler, 2015). Thus, in this paper we look at the effect of power in communal organizations such as tax offices and insurance companies and address the effects of coercive and legitimate power attributed to its regulating organization. It is the nature of communities to provide public goods for the benefit of community members, such as health services, education, and security. In a community, contribution to a public good is often voluntary, but some individuals exploit the vulnerable system, refrain from participation and free ride (Marwell & Ames, 1979). Thus, the organizations need to have measures in store to persuade free riders to follow their obligations and participate in contributions. On the one hand, these measures can be based on strict monitoring and heavy punishment (i.e. coercive power) whereas on the other hand, the organization can operate through legitimacy of its position, its expertise, its policy to disseminate relevant information, and its ability to make others identifying with it (i.e. legitimate power) (Gangl et al., 2015; in the tax context see Andreoni, Erard, & Feinstein, 1998; Braithwaite, 2009; Gangl, Muehlbacher, de Groot, Goslinga, Hofmann, Kogler, Antonides, & Kirchler, 2013).

It is the aim of the current research to shed light on the underlying psychological mechanisms that are elicited by coercive and/or legitimate power and in turn might impact the intention to cooperate. Experimentally, it is attempted to show how coercive and/or legitimate power of the organizations affect trust in organizations, the relational climate between organizations and individuals, their motivation and eventually, their intention to participate in the provision of the public good across two different communal contexts (i.e. tax and insurance). Earlier research shows that coercive power and legitimate power both enhance cooperation in public good dilemmas, where individual interests collide with collective ones (Masclét, Noussair, Tucker, & Villeval, 2003; Tyler, 2006; for a review on the influence factors in social dilemma situations see Van Lange, Joireman, Parks, & Van Dijk, 2013). However, experimental evidence that coercive and legitimate power trigger distinct psychological processes such as trust, perceived relational climates and specific motivations to cooperate which in turn also might explain cooperation is rare (for first empirical evidence in the tax context see, Hofmann, Gangl, Kirchler, & Stark, 2014). Both forms of organizations’ power (alone and

in combination) effectively increase cooperation (Hartl, Hofmann, Gangl, Hartner-Tiefenthaler, & Kirchler, 2015), but the actual underlying psychological processes responsible for the increase are less clear (Hofmann, Gangl, Kirchler, & Stark, 2014). Based on the different perceptions of coercive and legitimate power, we argue that the two forms of power initiate different psychological processes. Whereas in general severe sanctions in a social dilemma were found to diminish trust (Mulder, van Dijk, De Cremer, & Wilke, 2006), legitimacy was shown to increase trust between parties (Fu, Lin, & Sun, 2013).

The extension of the slippery slope framework (Gangl et al., 2015; Kirchler, Hoelzl, & Wahl, 2008; Kirchler, Kogler, & Muehlbacher, 2014) offers a theoretical model that explains and integrates existing research on the impact of coercive and legitimate power on specific psychological processes eventually fostering cooperative behavior. The framework postulates that perceived coercive power of organizations diminishes automatic and implicit trust in organizations because coercive power easily might be seen as a measure of hostility and aggression. Thus, coercive power constitutes an antagonistic and unfriendly interaction climate between the regulating organization and the individuals in which individuals only comply out of an enforced motivation (Gangl et al., 2015; Hofmann, et al., 2014). In an antagonistic climate, individuals are only motivated to cooperate because they fear possible controls and punishments. Contrary, legitimate power of organizations is assumed to strengthen reason-based trust in organizations. Organizations are perceived as competent and motivated to reach the shared goal which gives good reasons to trust in the benevolence of organizations (Gangl et al., 2015, Hofmann, et al., 2014). Legitimate power jointly with reason-based trust is suggested to stimulate a service climate in which individuals are treated as clients of the organizations, and as a result are motivated to cooperate voluntarily (Kroll, Cherry, & Shogren, 2007). Voluntarily motivated individuals cooperate because they see that the organization makes cooperative behavior easy offering information and their expertise so that cooperation is the simpler action than to defect (Gangl et al., 2015). Both motives of tax compliance, enforced compliance and voluntary cooperation, promote cooperative behavior, but the underlying impetus is assumed to differ.

The current research focuses on the psychological processes that operate when coercive and/or legitimate power are wielded to prohibit free-riding, such as tax evasion and insurance fraud. In detail, it is investigated how coercive power and legitimate power solely or in combination influence trust in organizations, the climate between organizations and individuals, and the motivations to cooperate. Additionally, it is analyzed whether trust, perceived relational climates and motivations, mediate the relation of power and the intention to cooperate. Subsequently, an introduction to coercive power and legitimate power, and to the impact of these forms of power on trust, climates and motivations is presented. Three laboratory experiments in the tax context and one online experiment in the insurance

context are described, each assessing the impact of (single or combined) power on the psychological processes leading to cooperative intentions. Finally, we discuss the results and identify their theoretical and practical implications.

The impact of power on cooperation

Although one might assume that power can be represented one-dimensional with two opposite poles, i.e., coercive power and legitimate power, but coercive power and legitimate power are two independent forms, which can be wielded exclusively or in combination (c.f., French & Raven, 1959; Raven, 1992, 1993). Thus, we define two primary concepts of power, *coercive power* based on control and punishment and *legitimate power* based on expertise, information provision, acceptance and appreciation (Gangl et al., 2015). For instance, the wielding of coercive power by threatening severe sanctions for unwanted behavior alone is not enough to explain compliant and cooperative behavior (Fehr & Falk, 2002): underlying motivational processes such as expectations (Copeland & Cuccia, 2002), reciprocity (Feld & Frey, 2007), and fairness (e.g., Hartner-Tiefenthaler, Kubicek, Rechberger, Kirchler & Wenzel, 2012) are essential. With these aspects, legitimate power, such as information on what the ‘morally’ desired behavior is and the expertly handling of members’ contributions to the communal good becomes important.

Power and trust

Coercive power and legitimate power are strongly related to trust (Gangl, et al., 2015). Trusting in another party is making oneself vulnerable towards this party (Mayer, Davis, & Schnorrmann, 1995). A decision to trust can be either based on reasons or taken implicitly (Castelfranchi & Falcone, 2010). Reason-based trust is a deliberate decision to make oneself vulnerable because the organization is perceived to pursue an important goal with competence, motivation and benevolence. In contrast, implicit trust is an automatic and unintentional reaction based on associative learning processes (Castelfranchi & Falcone, 2010).

The dynamic of power and trust is not fully clear as power was shown to diminish as well as to foster trust (e.g., Bachmann, 2001; Bijlsma-Frankema & Costa, 2005; Chenhall, Hall, & Smith, 2010; Fu et al., 2013; Mulder et al., 2006, Weibel, 2007). In general power is supposed to increase trust in others, but in situations where trust had already been high and power was introduced, the introduction of power undermined cooperation (Mulder et al., 2006). Thus, it is argued that implicit trust is damaged by coercive power (Gangl, et al., 2015), as coercion signals organizations’ distrust, it may weaken affective and social bonds with organizations, and thereby interrupts habitual and implicit cooperation (Das & Teng, 2001; Kramer, 1999).

Legitimate power, on the other hand, is increasing trust (Fu et al., 2013); when organizations are perceived as knowledgeable and legitimately in their position, trust increases. Perceived assistance by experts who work on a transparent legal basis provide many reasons to trust in the competence, motivation, and benevolence of organizations (Bijlsma-Frankema & van de Bunt, 2002; Malhotra & Murnighan, 2002). Thus, for reason-based trust a strong relationship with legitimate power is assumed because organizations with high legitimate power are perceived as competent to provide assistance and support (Gangl, et al., 2015). It is also assumed that the combination of coercive power and legitimate power primarily should affect reason-based trust and not implicit trust. Information on legitimate power is likely to generate a deliberate process and not an implicit process and thus, triggers reason-based trust, but not implicit trust, no matter whether it is perceived in combination with coercive power or not (Gangl et al. 2015).

It was shown that trust acts as mediator for the relationship between coercive power and cooperation (Balliet & Van Lange, 2013). Further, trust mediates the relation of sanction severity and moral judgments about free riders (Mulder, Verboon, & de Cremer, 2009). Under the condition of severe sanctions it can be observed that the higher trust in organizations is the more morally condemnable free riding behavior is perceived.

Power and relational climates

The interaction between an organization and community members leads to a specific relational climate, characterized by power and trust (Gangl et al., 2015; Kirchler et al., 2008). Based on positive impressions, individuals perceive the relational climate as pleasant and helpful, in a way as a service climate, in which the organization acts very client-oriented. Negative experiences with the organization trigger an aversive antagonistic climate in which distrust prevails. The organization convicts members of misconduct, who are hiding from the organization to escape the eye of the rules. Empirical research on the impact of climates is rare (e.g., Alm & Torgler, 2006; Hofmann et al., 2014). Derived from a study about the relationship commitment of business partners (Fu et al., 2013), connections between the service climate and (legitimate and coercive) power can be assumed. Legitimate power relates positively to service climate (i.e. relationship commitment) whereas coercive powers relates negatively. However, when both forms of power are prevalent at the same time, no relationship between coercive power and relationship commitment exists (Fu, et al., 2013). Furthermore, the combination of both coercive and legitimate power was shown to lead to a stronger effect of legitimate power than coercive power (Hofmann et al., 2014). Based on these results it can be assumed that in general coercive power seems to stimulate an antagonistic climate whereas legitimate

power seems to stimulate a service climate. In combination, the degree of perceived legitimate power might determine whether coercive power leads to an antagonistic climate or not (Gangl, et al., 2015).

Power and motivations for cooperation

As various forms of power induce different relational climates, they also encourage different motivations for cooperation. The punishment aspect of coercive power prompts enforced compliance as threat of severe punishment is experienced and hence, participants decide to cooperate out of coercion (van Meegeren, 2001; Kirchler et al., 2008). Legitimate power, on the other hand, increases a voluntary cooperation. Individuals contribute their fair share because they reciprocate to the positive experience gained through applied legitimate power (Kelman, 2006). Although coercive power and legitimate power are assumed to increase cooperation, the parties' motivations for cooperation differ fundamentally.

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 to be weak and therefore enforced motivations as well as cooperation decline. Legitimate power activates a reason-based decision. Individuals have accepted their obligation to cooperate and have realized that acting cooperatively is easier than defection. Organizations have practically designed the decision environment so that individuals perceive cooperative decisions as effortless and defection as difficult. Consequently, voluntary cooperation is the rule.

In cases in which coercive and legitimate power are applied together, the motivations to comply are unclear. Although results show the behavioral effects of coercive and legitimate power on compliance, the underlying processes are still largely unexplored (Hartl, et al., 2015; Hofmann et al., 2014). First, empirical evidence indicates that legitimate power is increasing voluntary cooperation, but only under the condition that parties violating the rules can be punished (Kroll et al., 2007). Thus, the combination of coercive and legitimate power seems to increase voluntary cooperation.

Overview of studies

We examine the psychological processes underlying the intentions to cooperate in communal organizations. Although theory suggests a correlative link between power and psychological processes, an experimental design was chosen as a first step investigating differences in psychological processes induced by extremely low or high coercive and/or extremely low or high 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 coercive power and

legitimate power on cooperative behavior. However, so far the underlying and probably mediating psychological mechanism why people intent to cooperate with the organization have not been analyzed. Hence, in the present research the following four hypotheses are examined:

Hypothesis 1: *Participants, who were exposed to high coercive power, report lower implicit trust, more antagonistic climate, and more enforced compliance.*

Hypothesis 2: *Participants, who were exposed to high legitimate power, report higher reason-based trust, more service climate, and more voluntary cooperation.*

Hypothesis 3: *Participants, who were simultaneously exposed to high coercive power and high legitimate power report higher reason-based trust, less antagonistic climate, more service climate, less enforced compliance and more voluntary cooperation.*

Hypothesis 4: *The relation 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.*

For testing Hypotheses 1 - 3 ANOVAs were conducted in order to analyze for differences of the experimental conditions whereas for Hypothesis 4 a mediation analysis was conducted to examine the psychological processes which determine the relationship between manipulated power and cooperative intentions. In the laboratory experiments individuals had to imagine to be a taxpayer in a fictitious country in which tax authorities wield coercive power (Study 1) and legitimate power (Study 2) exclusively as well as in combination (Study 3). In the online experiment again coercive and legitimate power were manipulated in combination, but this time the fictitious 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. For reasons of comparison, the designs of the four studies as well as the procedures are similar which facilitates conclusion on the effects of the different forms of power across different contexts. A between-subject design of the laboratory experiments assured that participants are confronted with low and high forms of power.

Study 1: Coercive Power in the Tax Context

Method

Participants

Hundred twenty students (64% men, $M_{\text{age}} = 24.48$, $SD = 5.85$) majoring in several different fields from management to biology participated on a voluntary basis and were paid according to their behavior in the experiment. The student population was specifically naïve regarding experiences with tax authorities and the hypotheses (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 a fictitious country with a hypothetical tax authority (for similar tax experiments see, e.g., Kirchler, Muehlbacher, Hoelzl, & Webley, 2009). In the two conditions, the hypothetical tax authority held either low or high coercive power. A tax authority with low/high coercive power was, for example, described as "... well known for its lenient/hard sanctions" (for full scenarios see Appendix). After participants were introduced to the experimental set-up, twenty years of a taxpayer's life (20 periods) were simulated using the software z-Tree (Fischbacher, 2007). Participants were asked to answer two items about their intention to pay taxes honestly in this situation. After that participants ran through 20 experimental rounds of paying their taxes on varying incomes and a tax rate of 40 percent. One randomly selected taxpaying round was used at the end of the experiment to remunerate participations based on their behavior (participants received on average 5.99 EUR ($SD = 1.22$ EUR) or 7.66 USD ($SD = 1.56$), respectively). Results on the tax payments can be found in Hartl et al., 2014. The partial correlation controlling for conditions between tax honesty intention and tax payments is $r = .58$, $p < .001$.

Material

In all treatment conditions, participants had to fill in a questionnaire. The questionnaire assessed tax honesty intention (2 items), implicit trust (3 items), reason-based trust (7 items), the antagonistic climate (3 items), the service climate (3 items), enforced compliance (3 items) and voluntary compliance (3 items). The participants' beliefs regarding wielded coercive power (4 items) and legitimate power (22 items) by the tax authority were assessed as manipulation check (adapted for the tax context from Hinkin & Schriesheim, 1989; Raven, Raven, Schwarzwald, & Koslowsky, 1998). The scale legitimate power compounded four sub-scales (legitimacy, expertise, information, identification), but for the sake of simplicity and due to the measurement models, the sub-scales were combined to one scale. Responses were indicated on a 7-point Likert scale ranging from 1 ('I totally disagree') to 7 ('I totally agree'). Cronbach α for the eight scales can be found in Table 1. Socio-demographics, gender,

age, income, nationality, employment, conditions of work (form of employment and working hours) and experience with tax authorities, were assessed as control variables. Although it can be expected that these variables are evenly distributed in all conditions, earlier research (e.g., Ahmed & Braithwaite, 2004; Bobek, Roberts, & Sweeney, 2007; Kastlunger, Dressler, Kirchler, Mittone, & Voracek, 2010; Wenzel, 2007) shows that these socio-demographics influence tax compliance. Exercising caution the variables are included in the analysis.

Results

Preliminary data analyses

To check whether the manipulation of intensity of coercive power was successful, an ANOVA controlling for socio-demographics was performed with the beliefs of coercive power as dependent variable. The results showed that the manipulation was successful as low (cp_{low}) and high (cp_{high}) levels of beliefs 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 beliefs of legitimate power (Table 1). Participants experiencing low or high coercive power reported equal beliefs of legitimate power (cp_{low} : $M = 4.13$, $SD = 1.04$; cp_{high} : $M = 4.24$, $SD = 0.90$; see Table 1).

Coercive Power

To test Hypothesis 1 whether coercive power applied exclusively decreases implicit trust, increases the awareness of an antagonistic climate and enforced compliance, ANOVAs were conducted including the intensity of coercive power (low versus high) as factor variables and controlling for socio-demographics.

The impact of coercive power on trust, climates and motivations

As expected, coercive power decreased *implicit trust* (cp_{low} : $M = 2.43$, $SD = 1.70$; cp_{high} $M = 1.93$, $SD = 1.31$; Table 1). Further, participants experiencing low coercive power or high coercive power 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 an interaction climate, analysis showed that, as expected, high coercive power led to a higher perception of an *antagonistic climate* (cp_{high} : $M = 3.86$, $SD = 1.68$) than when coercive power was low (cp_{low} : $M = 2.96$, $SD = 1.47$; Table 1). Further, participants experiencing low or high coercive power reported equal perceptions of a *service climate* (cp_{low} : $M = 3.34$, $SD = 1.61$; cp_{high} $M = 3.05$, $SD = 1.55$; Table 1).

Regarding the motivations 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 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 4 whether implicit trust, the perception of the antagonistic climate and enforced compliance mediate the relation between coercive power and the intention to pay taxes honestly, we first tested with an ANOVA controlling for socio-demographics if the manipulation of coercive power impacted the intention to be pay taxes honestly. The manipulation of high coercive power leads to higher honesty intention ($M = 4.92$, $SD = 1.70$) than low legitimate power ($M = 4.10$, $SD = 1.78$; Table 4).

In a second step, we applied the program Mediate (Hayes, Preacher, & Myers, 2011) to test whether the relation between coercive power and tax honesty intention is mediated by the proposed psychological process. This analysis allows to test for mediator effects of several variables, in our case implicit trust, the 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 regression (criterion regressing on mediators and on predictor) (Hayes, 2013; Hayes et al., 2011).

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
Beliefs on Coercive Power	.93	126.77 (1, 110)	<.001	.54
Beliefs on Legitimate Power	.90	0.70 (1, 110)	.41	<.01
Implicit Trust	.89	4.34 (1, 110)	.04	.04
Reason-based Trust	.84	0.01 (1, 110)	.92	<.01
Antagonistic Climate	.78	7.24 (1, 110)	.01	.06
Service Climate	.76	1.87 (1, 110)	.17	.02
Enforced Compliance	.94	48.78 (1, 110)	<.001	.31
Voluntary Cooperation	.74	0.09 (1, 110)	.77	<.01
Intended Tax Honesty	.90	7.40 (1,110)	<.01	.07

Note. α ... Cronbach α

The mediator analysis revealed, similar to the results found by the ANOVAS, that manipulated coercive power has an impact on implicit trust ($\beta = -.16, p = .07$), the antagonistic climate ($\beta = .28, p < .01$), enforced compliance ($\beta = .57, p < .001$), and impacts tax honesty intention ($\beta = .23, p = .01$). Nevertheless, only implicit trust ($\beta = .24, p = .01$) and coercive power ($\beta = .22, p = .05$) but neither the antagonistic climate ($\beta = -.03, p = .78$) nor enforced compliance ($\beta = .10, p = .37$) affect intended tax honesty ($r = .34, F(4, 115) = 3.77, p < .01$). Based on this, the indirect effect from coercive power to tax honesty intention is only found to be mediated by implicit trust (95% CI [-0.31; -0.01]). The perception of an antagonistic climate (95% CI [-0.20; 0.13]) and enforced compliance (95% CI [-0.17; 0.61]) are not significant mediators.

Discussion

In line with Hypothesis 1, high coercive power generally has a negative impact on implicit trust and initiates the perception of an antagonistic climate and enforced compliance. Coercive power applied alone does not impact reason-based trust, the perception of a service climate or voluntary cooperation. In addition, the relation between coercive power and intended tax honesty seems to be mediated only by implicit trust. Perceived antagonistic climate and the enforced motivation to cooperate are no mediators. Thus, Hypothesis 4 is partly confirmed.

Study 2: Legitimate Power in the Tax Context

Method

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, the population was selected because of their naïvety regarding experiences with tax authorities and the hypotheses (Mittone, 2006).

Experimental design and procedure

The experimental design and procedure was similar to Study 1. Two conditions were realized, in which the tax authority was described as holding either low or high legitimate power. The tax authority with low legitimate power was characterized as, e.g., being “poorly appreciated for its work”, the ones holding high legitimate power were presented as, e.g., being “highly appreciated for its work”. As legitimate power comprises legitimacy, expertise, dissemination of information, and identification, the

scenario contains all aspects of legitimate power how participants would find it in a news article (for full scenarios see the Appendix). Cronbach α for the eight scales can be found in Table 2. Participants were again remunerated according to their behavior and received on average 6.40 EUR ($SD = 1.38$ EUR) or 8.18 USD ($SD = 1.76$), respectively. The partial correlation controlling for conditions between tax honesty intention and tax payments is $r = .60, p < .001$.

Results

Preliminary data analyses

The manipulation check showed that the manipulation was successful as low and high levels of legitimate power induced beliefs 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 beliefs of coercive power (Table 2). The beliefs of coercive power were higher when legitimate power was high (lp_{high} : $M = 4.51, SD = 1.57$) rather than low (lp_{low} : $M = 3.48, SD = 1.64$).

Legitimate Power

To test Hypothesis 2 whether legitimate power applied alone increases reason-based trust, the awareness of a service climate and voluntary cooperation, ANOVAs were conducted including the intensity of legitimate power (low versus high) as factor and controlling for socio-demographics.

The impact of legitimate power on trust, climates and motivations

Participants experiencing low legitimate power or high legitimate power 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 2). 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 2).

Regarding the perception of the relational climate, unexpectedly the analysis revealed that low legitimate power lead to a higher perception of an *antagonistic climate* (lp_{low} : $M = 4.47, SD = 1.47$) than 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 2).

Regarding the motivations for cooperation, participants in the high legitimate power condition felt more *enforced* to comply (lp_{high} : $M = 4.70, SD = 1.68$) than participants in the low legitimate power condition (lp_{low} : $M = 3.36, SD = 1.75$). In line with predictions, participants experiencing high intensity of legitimate power reported higher levels of *voluntary cooperation* (lp_{high} : $M = 3.90, SD =$

1.61) than participants experiencing low intensity of legitimate power (lp_{low} : $M = 2.84$, $SD = 1.65$; see Table 2).

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

Testing Hypothesis 4 whether reason-based trust, the service climate and voluntary cooperation mediate the relation between legitimate power and honest tax intention, we again tested for the manipulation of legitimate power on the intention to be tax honest. The ANOVA controlling for socio-demographics confirmed the manipulation and revealed that high legitimate power leads to higher honesty intention ($M = 4.92$, $SD = 1.43$) than low legitimate power ($M = 3.74$, $SD = 1.55$; Table 4).

Table 2 Study 2: Results of the ANOVAs with *legitimate power* as independent variable

Dependent variables	α	F (df ₁ , df ₂)	p	η_p^2
Beliefs on Coercive Power	.89	11.09 (1, 120)	.001	.09
Beliefs on Legitimate Power	.95	73.02 (1, 120)	<.001	.38
Implicit Trust	.88	1.44 (1, 120)	.23	.01
Reason-based Trust	.89	53.29 (1, 120)	<.001	.31
Antagonistic Climate	.83	39.90 (1, 120)	<.001	.25
Service Climate	.88	43.99 (1, 120)	<.001	.27
Enforced Compliance	.91	18.64 (1, 120)	<.001	.13
Voluntary Cooperation	.85	10.58 (1, 120)	<.001	.08
Intended Tax Honesty	.78	16.17 (1,120)	<.001	.12

Note. α ... Cronbach α

In a second step, we again used Mediate (Hayes et al., 2011) for the mediator analysis. The findings, similar to those found via the ANOVAs, showed that manipulated legitimate power has an effect on reason-based trust ($\beta = .56$, $p < .001$), the service climate ($\beta = .52$, $p < .001$), and voluntary cooperation ($\beta = .31$, $p < .001$), and tax honesty intention ($\beta = .37$, $p < .001$). Further, reason-based trust ($\beta = .07$, $p = .07$) and legitimate power ($\beta = .25$, $p = .02$) but neither the service climate ($\beta = -.11$, $p = .36$) nor the voluntary cooperation ($\beta = .09$, $p = .41$) affect intended tax honesty ($r = .44$, $F(4, 125) = 7.66$, $p < .001$). Consequently, an indirect effect from legitimate power to tax honesty intention is

solely explained by reason-based trust (95% CI [0.05; 0.94]). The relationship is not mediated via the service climate (95% CI [-0.51; 0.15]) or voluntary cooperation (95% CI [-0.09; 0.30]).

Discussion

Consistent with Hypothesis 2, high legitimate power has a positive effect on reason-based trust, on the perception of a service climate and on voluntary cooperation. Not hypothesized, high legitimate power also leads to an increase in perceived coercive power and to higher enforced compliance. Further, 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 also interfering. Therefore, in the third experiment the relation of coercive power and legitimate power is examined. Regarding Hypothesis 4, again only trust, this time reason-based trust, is mediating the relation between legitimate power and tax honesty intention.

Study 3: Coercive Power and Legitimate Power Combined in the Tax Context

Method

Participants

Overall, 368 students (34% men, $M_{\text{age}} = 24.26$, $SD = 5.56$) majoring in different fields participated in the experiment and were paid based on their behavior in the experiment. Once more, population selection based on participants' naivety regarding experiences with tax authorities and the hypotheses (Mittone, 2006).

Experimental design and procedure

Experimental design and procedure was similar to Study 1 and 2. Different to Study 1 and Study 2, participants were randomly assigned to one of four conditions in which the hypothetical tax authority held low or high coercive power and low or high legitimate power. The combination of low/high coercive power and of low/high *legitimate power* was operationalized through scenarios, e.g., "In general, the tax authority is known for its low/high penalties for tax evasion, and is *little/very* appreciated for its work." (for full scenarios see the Appendix). Cronbach α are presented in Table 3. Participants were again remunerated according to their behavior and received on average 6.21 EUR ($SD = 1.32$ EUR) or 7.94 USD ($SD = 1.69$), respectively. The partial correlation controlling for conditions between tax honesty intention and tax payments is $r = .64$, $p < .001$.

Results

In the following, only hypothesized and/or significant results are reported, however, for completeness Table 3 displays all findings independently whether significant or not.

Preliminary data analyses

Checking the coercive power manipulation by dint of the participants' beliefs of coercive power, the ANOVA controlling for socio-demographics showed that low and high coercive power conditions induced respective beliefs (cp_{low} : $M = 2.67$, $SD = 1.21$; cp_{high} : $M = 5.50$, $SD = 1.33$; Table 3).

Likewise, a manipulation check for legitimate power confirmed the manipulation (Table 3). Participants experiencing high legitimate power reported beliefs of higher legitimate power (lp_{high} : $M = 4.82$, $SD = 0.94$) than participants who experienced low 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 beliefs of coercive power (Table 3). Participants believed 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

Again, to test Hypothesis 3 whether coercive and legitimate power applied together increase implicit trust, increase reason-based trust, decrease the awareness of an antagonistic climate, increase the perception of a service climate, decrease enforced compliance and increase voluntary cooperation, 2 (low versus high coercive power) by 2 (low versus high legitimate power) ANOVAs controlling for socio-demographics were applied.

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

According to expectations, participants in conditions with low/high coercive power and low/high 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 3).

Regarding *reason-based trust*, the analysis revealed as expected that participants reported higher levels of reason-based when *legitimate power* was high (lp_{high} : $M = 4.39$, $SD = 1.17$) rather than low (lp_{low} : $M = 2.69$, $SD = 1.04$; see Table 3).

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 3). Further, 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 3).

Table 3 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
Beliefs on Coercive Power		.91			
	CP		444.04 (1, 356)	<.001	.56
	LP		5.69 (1, 356)	.02	.02
	CPxLP		0.17 (1, 356)	.68	<.01
Beliefs on Legitimate Power		.94			
	CP		0.45 (1, 356)	.50	<.01
	LP		255.73 (1, 356)	<.001	.42
	CPxLP		0.07 (1, 356)	.79	<.01
Implicit Trust		.86			
	CP		1.07 (1, 356)	.30	<.01
	LP		1.79 (1, 356)	.18	<.01
	CPxLP		0.04 (1, 356)	.84	<.01
Reason-based Trust		.86			
	CP		1.00 (1, 356)	.32	<.01
	LP		205.87 (1, 356)	<.001	.37
	CPxLP		1.71 (1, 356)	.19	<.01
Antagonistic Climate		.84			
	CP		21.80 (1, 356)	<.001	.06
	LP		72.21 (1, 356)	<.001	.17
	CPxLP		0.34 (1, 356)	.56	<.01
Service Climate		.85			
	CP		0.12 (1, 356)	.73	<.01
	LP		121.71 (1, 356)	<.001	.26
	CPxLP		1.09 (1, 356)	.30	<.01
Enforced Compliance		.92			
	CP		89.47 (1, 356)	<.001	.20
	LP		3.82 (1, 356)	.05	.01
	CPxLP		0.02 (1, 356)	.89	<.01
Voluntary Cooperation		.83			
	CP		0.23 (1, 356)	.64	<.01
	LP		40.64 (1, 356)	<.001	.10
	CPxLP		0.01 (1, 356)	.91	<.01
Intended Tax Honesty		.86			
	CP		32.65 (1, 356)	<.001	.08
	LP		19.36 (1, 356)	<.001	.05
	CPxLP		0.04 (1, 356)	.84	<.01

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

Regarding the motivations for cooperation, the analysis highlighted that, as expected, in conditions with low coercive power participants reported to feel less *enforced* than in conditions with high coercive power (cp_{ow}: $M = 3.35$, $SD = 1.67$; cp_{high}: $M = 5.06$, $SD = 1.80$; see Table 3). Further, as expected, participants reported more *voluntary cooperation* when legitimate power was high (lp_{high}: $M = 4.04$, $SD = 1.55$) rather than low (lp_{low}: $M = 2.99$, $SD = 1.43$, see Table 3).

The mediating role of trust, climate and motivation

Testing Hypothesis 4 whether implicit and reason-based trust, the antagonistic and the service climate, enforced compliance and voluntary cooperation mediate the relation between coercive and legitimate power and honest tax intention, we first tested if the manipulation of coercive power and legitimate impacted the intention to be tax honest. The ANOVA controlling for socio-demographics found that coercive power and legitimate power significantly have an impact on intended tax honesty and that no significant interaction exists. High coercive power leads to higher honesty intention ($M = 4.98$, $SD = 1.41$) than low coercive power ($M = 4.02$, $SD = 1.78$). Similarly, manipulations of high legitimate power stimulated higher tax honesty intention ($M = 4.86$, $SD = 1.50$) than lower legitimate power ($M = 4.13$, $SD = 1.76$; Table 4).

In a second step we again used Mediate (Hayes et al., 2011) for the mediator analysis. Similar to the ANOVA results showed that manipulated coercive and legitimate power have an effect on implicit trust (cp: $\beta = -.06$, $p = .23$; lp: $\beta = .05$, $p = .34$; $r = .08$, $F(2, 365) = 1.18$, $p = .31$), reason-based trust (cp: $\beta = .05$, $p = .26$; lp: $\beta = .61$, $p < .001$; $r = .61$, $F(2, 365) = 109.36$, $p < .001$), the antagonistic climate (cp: $\beta = .22$, $p < .001$; lp: $\beta = -.39$, $p < .001$; $r = .45$, $F(2, 365) = 46.17$, $p < .001$), the service climate (cp: $\beta = .01$, $p = .77$; lp: $\beta = .51$, $p < .001$; $r = .51$, $F(2, 365) = 64.65$, $p < .001$), enforced compliance (cp: $\beta = .44$, $p < .001$; lp: $\beta = .11$, $p < .05$; $r = .46$, $F(2, 365) = 48.01$, $p < .001$), voluntary cooperation (cp: $\beta = -.02$, $p = .75$; lp: $\beta = .33$, $p < .001$; $r = .33$, $F(2, 365) = 22.82$, $p < .001$), and tax honesty intention (cp: $\beta = .29$, $p < .001$; lp: $\beta = .22$, $p < .001$; $r = .36$, $F(2, 365) = 37.22$, $p < .001$) in accordance with predictions.

However, only reason-based trust ($\beta = .18$, $p = .03$) and coercive power ($\beta = .30$, $p < .001$) but not implicit trust ($\beta = .03$, $p = .55$), the antagonistic climate ($\beta = -.04$, $p = .53$), the service climate ($\beta = -.11$, $p = .36$), enforced compliance ($\beta = -.05$, $p = .44$), or voluntary cooperation ($\beta = .08$, $p = .24$), nor legitimate power ($\beta = .10$, $p = .14$) affect intended tax honesty ($r = .41$, $F(8, 359) = 9.13$, $p < .001$). Consequently, there is only one indirect effect, i.e., from legitimate power to tax honesty intention via reason-based trust (95% CI [0.10; 0.65]). All the other indirect effects from coercive and legitimate power via implicit trust (cp: 95% CI [-0.04; 0.01]; lp: 95% CI [-0.01; 0.03]), via reason-based trust (cp: 95% CI [-0.01; 0.08]), via the antagonistic climate (cp: 95% CI [-0.10; 0.04]; lp: 95% CI [-0.08;

0.18]), via the service climate (cp: 95% CI [-0.02; 0.02]; lp: 95% CI [-0.28; 0.10]), via enforced compliance (cp: 95% CI [-0.19; 0.09]; lp: 95% CI [-0.05; 0.02]) and via voluntary cooperation (cp: 95% CI [-0.04; 0.02]; lp: 95% CI [-0.04; 0.21]) are not significant.

Discussion

The analyses partly confirm Hypothesis 3. The combination of coercive power and legitimate power in the context of taxpaying confirms the prediction that in cases of high legitimate power reason-based trust and not implicit trust is high. When coercive power is high, the perception of an antagonistic climate is rising, but is fundamentally reduced by high legitimate power. In addition, it is confirmed that the service climate is rising with high legitimate power and that voluntary cooperation is positively stimulated by legitimate power. Contrary to the Hypothesis 3 and to the results of Study 1, enforced compliance is not reduced by the combination of coercive power and legitimate power. Enforced compliance is only increased by high coercive power, but not reduced by legitimate power, which overall leads to an increase and not a decrease of enforced compliance with power. Regarding the mediating effect tested with Hypothesis 4, again, only reason-based trust is mediating the relation between power and tax honesty intention.

Study 4: Coercive Power and Legitimate Power Combined in the Insurance Context

Method

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

Experimental design and procedure

Different to Study 1 - 3, in Study 4 scenarios in an online experiment were used in which an insurance organization was presented as wielding high or low coercive power and high or low legitimate power. Participants were randomly assigned to one of four conditions. The combination of low/high coercive power and of low/high *legitimate power* was operationalized through, e.g., “In general, the insurance company is known for its low/high penalties for insurance fraud. It is *little/very appreciated* for its work.” (for full scenarios see Appendix). After the scenarios the respondents had to report a damage to this specific 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 GE [GE ...

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 1,000 GE, [they] could report a higher claim at the insurance company." The amounts of respondents' claims (ranging from 600 GE to 1,000 GE) were collected to assess their relative cooperation with the insurance organization and will further be displayed in percentages (reported amount – 600) / 400). The questionnaire which was used in Study 1 - 3 was adapted to the insurance context and was applied to measure different forms of trust, the perception of the relational climate and different motivations to cooperate. Cronbach α s are presented in Table 4. The socio-demographics, gender, age, income, nationality, employment and experience with insurance organizations, were again collected as control variables.

Results

In the following only hypothesized and/or significant results are reported, for completeness Table 4 displays all findings independently whether significant or not.

Preliminary data analyses

The manipulation check showed that beliefs on coercive power as well as legitimate power were induced in line with the manipulation (Table 4). Participants held beliefs of lower coercive power in the low coercive power condition (cp_{low} : $M = 3.17$, $SD = 1.32$) than in the high coercive power condition (cp_{high} : $M = 5.28$, $SD = 1.31$). It has to be noted that a weak interaction of coercive and legitimate power on the beliefs of coercive power exists; but as this interaction explains only 5 percent of the variance and the main effect of coercive power explains 47 percent, this interaction is negligible. Similarly, participants experiencing high legitimate power held beliefs of higher legitimate power (lp_{high} : $M = 4.74$, $SD = 1.14$) than participants who experienced low legitimate power (lp_{low} : $M = 3.79$, $SD = 1.15$; Table 4).

Coercive Power and Legitimate Power

Again, to test Hypothesis 3 whether coercive power and legitimate power applied together increase implicit trust and reason-based trust, decrease the awareness of an antagonistic climate, increase the perception of a service climate, decrease enforced compliance and increase voluntary cooperation, 2 (low versus high coercive power) by 2 (low versus high legitimate power) ANOVAs controlling for socio-demographics were conducted.

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

Similar to the experiments in the tax context, participants in conditions with low/high coercive power and low/high 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 4). Further, as expected, participants reported higher levels of *reason-based trust* when legitimate power was high (lp_{high} : $M = 4.46$, $SD = 1.14$) rather than low (lp_{low} : $M = 3.22$, $SD = 1.37$, see Table 4).

Regarding the perception of the relational climate, 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 similar to Study 2 and 3 decreased with legitimate power (lp_{low} : $M = 3.84$, $SD = 1.81$; lp_{high} : $M = 2.99$, $SD = 1.81$, see Table 4). Further, 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 4).

Regarding the motivations for cooperation, the analysis showed that, as expected, participants in conditions with low coercive power reported to feel less *enforced* (cp_{low} : $M = 3.69$, $SD = 1.81$) than in conditions with high coercive power (cp_{high} : $M = 4.37$, $SD = 1.66$; see Table 4). Furthermore, as expected, participants reported more *voluntary cooperation* when legitimate power was high (lp_{high} : $M = 4.35$, $SD = 1.49$) rather than low (lp_{low} : $M = 3.37$, $SD = 1.44$, see Table 4).

The mediating role of trust, climate and motivation

Again, testing Hypothesis 4 whether implicit and reason-based trust, the antagonistic and the service climate, enforced compliance and voluntary cooperation mediate the relation between coercive and legitimate power and intended insurance fraud, we first tested if the manipulation of coercive power and legitimate impacted the intention to commit an insurance fraud. An ANOVA controlling for socio-demographics revealed a significant main effect of coercive power and a tendency for an interaction effect of coercive and legitimate power. The analysis showed that as long as legitimate power was low, insurance claims, illustrated by the percentage of insurance fraud, were similar when coercive power was low ($cp_{low}lp_{low}$: $M = 36.86$, $SD = 42.41$) or high ($cp_{high}lp_{low}$: $M = 35.25$, $SD = 36.60$). Whereas the combination of high legitimate power and low coercive power lead to highest insurance claims ($cp_{low}lp_{high}$: $M = 45.89$, $SD = 40.55$), the combination of high legitimate power and high coercive power resulted, as expected, in the lowest insurance claims ($cp_{high}lp_{high}$: $M = 26.34$, $SD = 29.72$; Table 4).

Table 4 Study 4: Results of the ANOVAs with *coercive power* and *legitimate power* as independent variables

Dependent variables		α	F (df1, df2)	p	η_p^2
Beliefs on Coercive Power		.87			
	CP		80.41 (1, 92)	<.001	.47
	LP		0.76 (1, 92)	.38	<.01
	CPxLP		5.22 (1, 92)	.03	.05
Beliefs on Legitimate Power		.94			
	CP		0.11 (1, 92)	.74	<.01
	LP		18.95 (1, 92)	<.001	.17
	CPxLP		0.00 (1, 92)	.95	<.01
Implicit Trust		.95			
	CP		0.53 (1, 92)	.47	<.01
	LP		1.08 (1, 92)	.30	.01
	CPxLP		0.46 (1, 92)	.50	<.01
Reason-based Trust		.88			
	CP		0.20 (1, 92)	.66	<.01
	LP		28.30 (1, 92)	<.001	.24
	CPxLP		0.45 (1, 92)	.50	<.01
Antagonistic Climate		.89			
	CP		5.96 (1, 92)	.02	.06
	LP		5.80 (1, 92)	.02	.06
	CPxLP		3.17 (1, 92)	.08	.03
Service Climate		.88			
	CP		0.68 (1, 92)	.41	<.01
	LP		29.97 (1, 92)	<.001	.25
	CPxLP		0.09 (1, 92)	.77	<.01
Enforced Compliance		.89			
	CP		3.89 (1, 92)	.05	.04
	LP		3.39 (1, 92)	.07	.04
	CPxLP		0.55 (1, 92)	.46	<.01
Voluntary Cooperation		.81			
	CP		2.73 (1, 92)	.10	.03
	LP		14.22 (1, 92)	<.001	.13
	CPxLP		0.01 (1, 92)	.93	<.01
Intended Insurance Fraud					
	CP		4.49 (1, 92)	.04	.05
	LP		0.19 (1, 92)	.66	<.01
	CPxLP		3.28 (1, 92)	.07	.03

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

In a second step, we again applied the program Mediate (Hayes et al., 2011) for the mediator analysis. Results revealed - similar to the ANOVA findings - that manipulated coercive and legitimate power have an effect on implicit trust (cp: $\beta = .11$, $p = .26$; lp: $\beta = .13$, $p = .18$; $r = .17$, $F(2, 99) = 1.44$, $p = .24$), reason-based trust (cp: $\beta = -.01$, $p = .94$; lp: $\beta = .45$, $p < .001$; $r = .45$, $F(2, 99) = 12.26$, $p < .001$), the antagonistic climate (cp: $\beta = .25$, $p < .01$; lp: $\beta = -.22$, $p < .05$; $r = .34$, $F(2, 99) = 6.63$, $p < .01$), the service climate (cp: $\beta = -.10$, $p = .29$; lp: $\beta = .46$, $p < .001$; $r = .47$, $F(2, 99) = 14.28$, $p < .001$), enforced compliance (cp: $\beta = .21$, $p < .05$; lp: $\beta = .17$, $p = .08$; $r = .26$, $F(2, 99) = 3.60$, $p < .03$), and voluntary cooperation (cp: $\beta = -.15$, $p = .12$; lp: $\beta = .31$, $p = .001$; $r = .35$, $F(2, 99) = 6.98$, $p = .01$), but not on insurance fraud intention (cp: $\beta = -.15$, $p = .14$; lp: $\beta = -.01$, $p = .89$; $r = .15$, $F(2, 99) = 1.11$, $p = .33$). Additionally, enforced compliance ($\beta = .32$, $p < .01$) and coercive power ($\beta = -.25$, $p < .05$) but neither implicit trust ($\beta = .17$, $p = .10$), nor reason-based trust ($\beta = -.30$, $p = .10$), nor the antagonistic climate ($\beta = .11$, $p = .42$), nor the service climate ($\beta = .07$, $p = .75$), nor voluntary cooperation ($\beta = .03$, $p = .81$), nor legitimate power ($\beta = .03$, $p = .82$) are related to intended insurance fraud ($r = .45$, $F(8, 93) = 2.96$, $p < .01$).

Consequently, 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]). Second, coercive power impacts insurance fraud intention via an enforced compliance (95% CI [0.77; 10.64]) and third, also legitimate power impacts insurance fraud intention via enforced compliance (cp: lp: 95% CI [0.28; 9.38]). All other indirect effects from coercive and legitimate power are not significant (via implicit trust cp: 95% CI [-0.69; 4.77]; lp: 95% CI [-0.51; 5.13], via reason-based trust cp: 95% CI [-3.70; 4.21], via the antagonistic climate cp: 95% CI [-2.09; 7.34]; lp: 95% CI [-6.31; 1.79], via the service climate cp: 95% CI [-4.08; 2.31]; lp: 95% CI [-8.62; 13.70], and via voluntary cooperation cp: 95% CI [-3.43; 2.39]; lp: 95% CI [-4.29; 6.02]).

Discussion

The predictions of Hypothesis 3 are partly confirmed. The combination of coercive and legitimate power backs up the prediction that reason-based trust is high in cases of high legitimate power and that the perception of a service climate, as well as voluntary cooperation is positively stimulated by legitimate power. Further, coercive power impacts the perception

of an antagonistic climate as well as enforced compliance. Similar to study 3, legitimate power increases reason-based trust which in turn predicts insurance fraud intention.

In contrast to study 1-3, results of study 4 show that intended insurance fraud is not directly affected by coercive power. Nevertheless, coercive power increases enforced compliance, which in turn decreases the intention to commit insurance fraud. Additionally, legitimate power only impacts insurance fraud intention because it first impacts reason-based trust and the motivation to cooperate enforcedly.

General discussion

Overall, all four studies confirm the hypothesized impacts of coercive power and legitimate power on the psychological process, i.e., trust, relational climates and motivations to cooperate, when deciding to cooperate with tax authorities or insurance organizations (Figure 1). As expected, coercive power applied exclusively, decreases implicit trust, increases the perception of an antagonistic climate, and enforced compliance. Implicit trust is additionally mediating coercive power's impact on cooperative intention. For the combined prevalence of coercive and legitimate power, coercive power does not - as expected - impact implicit trust, but leads to a perceived antagonistic climate and to an enforced motivation to comply. It has a direct impact on tax cooperation intention but on insurance fraud intention the effect was only found to be indirect via enforced compliance.

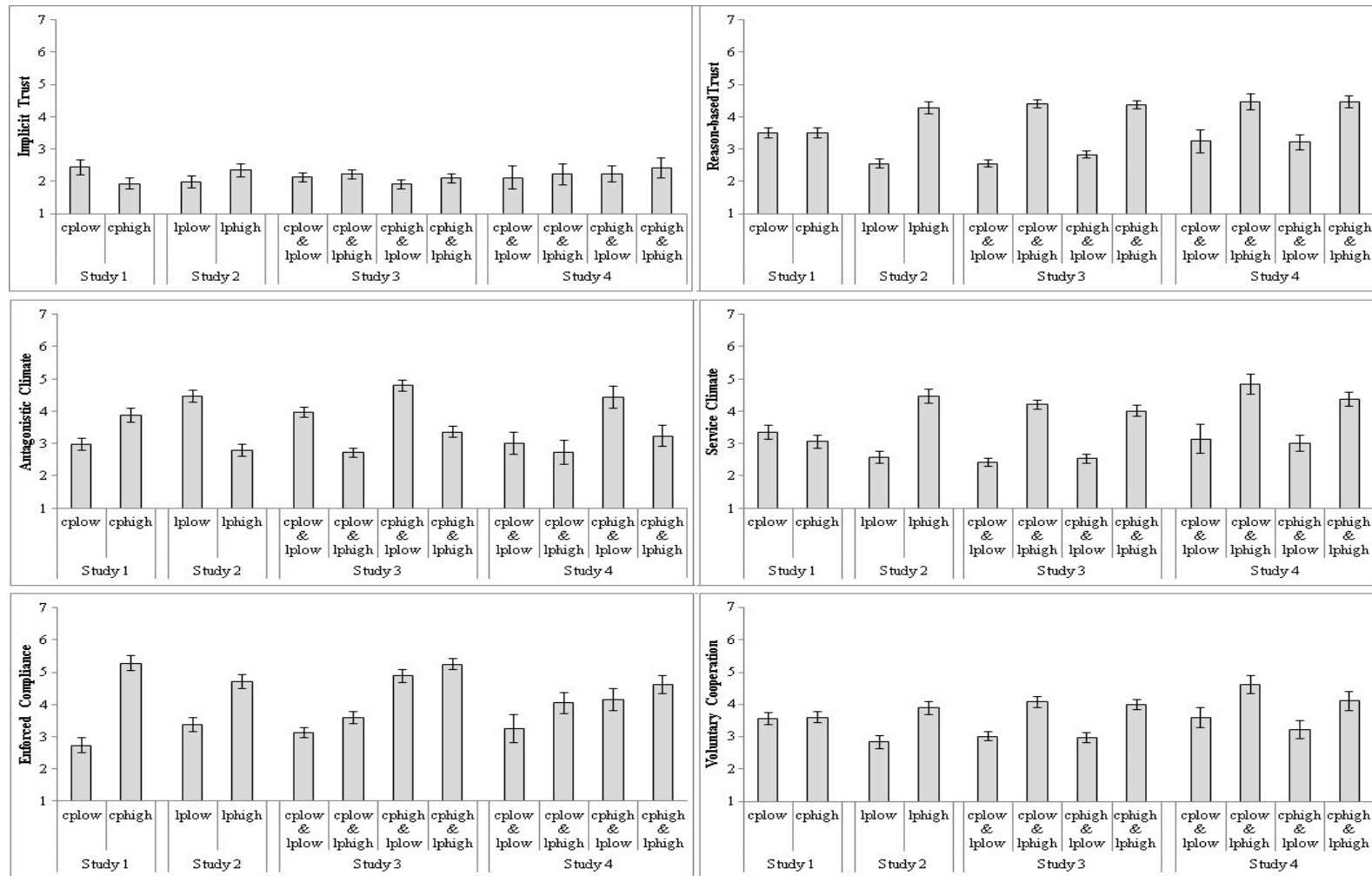
As expected, legitimate power wielded exclusively or in combination with coercive power increases reason-based trust, the perception of a service climate and the motivation to cooperate voluntarily. The relation of legitimate power and intended cooperative behavior is mediated by reason-based trust.

In addition to that, two unexpected results are found. First, in Study 2, and by tendency in Study 3 and 4, legitimate power contrary to expectations increases the enforced motivation to cooperate. One explanation for this unexpected result could be that due to feelings of reciprocity even the wielding of legitimate power might make participants experience some 'social' coercion responsible for motives of enforced compliance. This is in line with Ouchi's (1979) informal clan control that sees reciprocity and a legitimate organization as foundation. Additionally, social agreement such as common values and beliefs would constitute a further pre-requisite for clan control. Another possible reason for this unexpected relation might be that legitimate power leads to the impression that the organizations have a high proficiency to

detect and punish defecting individuals, which results in feeling enforced compliance. Future research will have to consider this issue.

Second, contrary to expectations, legitimate power wielded exclusively or in combination reduced the perceived antagonistic climate (Studies 2 – 4), which is in line with earlier findings (Hofmann et al., 2014). Coercive power (i.e., the exertion of audits and fines) in combination with legitimate power can be believed to be legitimate and, thus, be accepted as the right thing to do (i.e., as being undertaken by a lawful organization, done expertly with the spreading of relevant information and acting for a valuable cause). This assumption is supported by Study 2, which shows that coercive power is more pronounced, when legitimate power is rather high than low (in this study only legitimate power was manipulated and no information on coercive power is given). It might be that trust in organizations and subsequent relational climates are more effected by legitimate power which is perceived in addition to coercive power, than by coercive power alone. This is suggested by the relative strong impact of legitimate power on reason-based trust in Study 2 - 4.

Figure 1 The impact of coercive and legitimate power on the trust, climate, and motivation scales in Study 1 – 4



Overall, present results certainly indicate a connection between coercive power and legitimate power. With the current data, this connection cannot sufficiently be tested, but future research will have to investigate this aspect.

Although the current studies certainly have their merits, there are some limitations that have to be approached in future research. As with most laboratory experiments, the investigated samples are not representative, specifically they comprise students who are not well experienced with tax authorities and/or insurance organizations. In the case of the current studies this, nonetheless, is rather an advantage than a disadvantage. 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 organization (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 which not only investigate the direct impact of power on cooperation (e.g., Ariel, 2012; Gangl, Torgler, Kirchler, & Hofmann, 2014) but which also investigate the underlying psychological 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*. Further, the experimental design of the current study can only test for differences. The correlative connections between power and psychological processes are only assumed. Thus, this design allows only limited conclusions regarding the mediators, because not perceived coercive and legitimate power of real existing organizations are included in the analysis, but the manipulated factors of fictitious organizations. 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 relations by using field data.

Literature indicates that the severity of punishment is contingent on the type of social dilemma (Molenmaker, de Kwaadsteniet, & van Dijk, 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 works similar in both contexts. The two organizations in the studies, the tax authority and the insurance organization, are representing a small range of organizations that wield power to control individuals' behavior in social dilemma situations.

In future research other institutions such as companies directing employees' behavior or governments ensuring citizens' environmental friendliness should be investigated. Research on how their power affects trust, relational climates, and motivations for cooperation, will further support as well as extend current findings.

Another strand of research might move away from the impact of single organizations' power and start to investigate the power of certain groups (e.g., civic communities) over their members. In such communities power might lose its importance and trust may become the most important determinant of cooperation. Furthermore, it would be of interest to check whether these psychological mechanisms are stable across cultures. Research indicates different reactions to power depending on the cultural background (Kopelman, 2009). Thus, the current studies allow formulating new hypotheses that are theoretically as well as practically relevant.

From a practical point of view, the present findings are of value, firstly for tax authorities and insurance companies and secondly also for other organizations wielding power. Results indeed show that sanctions of undesired behavior as well as legitimate procedures both, not only foster cooperation, but have different impacts on underlying psychological processes. Severe punishments lead to a hostile and antagonistic climate between the organization and the individual that should be avoided whereas supportive procedures foster trust towards the organization and with that the perception of a reciprocal service climate. Both processes operate via trust; while coercive power applied exclusively operates via implicit trust, legitimate power wielded exclusively or in combination operates via reason-based trust. Tax authorities as well as insurance organizations are supposed to reduce costly punishments, and to provide supportive procedures, helpful information and pursue societal goals to assure a service climate. This operation would in the long run create trust towards them. The findings also indicate that strict audits and severe fines might alienate individuals either reacting with enforced compliance or looking for more appealing alternatives. Thus, the current results should not only initiate rethinking power of tax authorities and insurance organizations but also in regard to other organizations shaping individual behavior.

Highlighting the psychological mechanisms by showing experimentally how coercive and/or legitimate power of organizations affect trust in organizations, the climate between the organization and the individuals and their motivations to participate in the provision of the public good over different contexts expanded the understanding of the operating mode of organizations' power. While the mediating effects clearly show that a key factor to understand

the mechanisms is trust, the relational climates and motivations to comply become of marginal interest. They are a product of specific forms of power, but they do not interfere with the actual connection of power and behavioral intention. The findings have extensive consequences for theory as well as for real world organizations giving direction for future research and specifying actions for power wielding organizations.

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Publication 6

Hartl, B., Hofmann, E., Olsen, J., & Kirchler, E. (submitted). Sanctions in Real-Life Social Dilemmas: Impact and Intervening Factors.

Abstract

Many problems people face are at their core social dilemmas, opposing personal interests to interests of the community. Sanctions exercised by authorities are widely used against non-cooperation in social dilemmas. Contradicting results on the effectiveness of sanctions lead to the assumption that the impact differs over social dilemma situations and rests upon dilemma related factors. A laboratory experiment (Study1) and an online questionnaire (Study2) reveal that severe sanctions increase cooperation and that behavior differs between social dilemma situations. Examining intervening factors in Study 2, the impact of the severity of sanctions becomes insignificant; cooperation is rather predicted by participants' evaluation of the offense and feelings of security which is related to legitimate power of the authority that again is related to social norms. The strength of these relations differs over social dilemma situations. The studies provide evidence that the context of social dilemmas is crucial for the impact of sanctions.

Keywords: social dilemma, coercive power, tax, public transport, music piracy

Introduction

When a community provides a public resource, such as public transport, individuals are each better off when they make use of it without contributing in return (Kollock, 1998). For the interest of the community, it would be better if everyone paid the fee for the public transport, and therefore cooperated. Such a situation represents a social dilemma, that is a situation in which the personal interest of an individual is opposed to the interest of the community (Dawes, 1980). Cooperation is costly to the individual, but helps all other community members (Cubitt, Drouvelis, Gaechter, & Kabalin, 2011). Sanctioning non-cooperative behavior is a frequently proposed solution to ensure cooperation in a social dilemma, because, due to sufficient costs for defection, cooperation will pay (Fehr & Gächter, 2002).

Empirical research on the effectiveness of sanctions has revealed contradicting results. This may be due to the fact that social dilemma situations are manifold (e.g. taxpaying, illegal music downloading, environmental pollution), differing in characteristics of the situation or characteristics of the punishing authority. It can be assumed that, depending on the specific social dilemma situation, different mechanisms, like social norms, get activated by relevant cues in the environment and that people act according to specific dilemma related factors. The current research therefore aims at investigating the impact of sanctions on cooperation over different social dilemma situations and at examining psychological factors to explain differences between social dilemma situations which have previously been studied independently.

Theoretical Background

Most of the world's greatest challenges represent social dilemmas, including taxpaying, environmental pollution, energy crises, or overharvesting of the oceans (Van Lange, Joireman, Parks, & Van Dijk, 2013). Sometimes cooperation in a social dilemma means contributing to a resource owned by the community, sometimes it means not taking from a resource shared by the community (Van Lange et al., 2013). All social dilemma situations face the challenge of free-riding. If too many individuals in a community do not cooperate, the public good can no longer be provided and therefore all community members are worse off (Kollock, 1998).

Sanctions for non-cooperative behavior in a social dilemma can either be exercised by other group members (peers) or by a regulating authority which holds coercive power. The term "coercive power" refers to the authorities' ability to sanction non-cooperation (Raven,

Schwarzwald, & Koslowsky, 1998). In the current article, we focus on sanctions executed by an authority, as in modern societies, systems of control are often centralized in forms of legal authorities (c.f. Baldassarri & Grossman, 2011). As research on authorities' coercive power is scarce, we will also refer to findings on peer punishment in the theory and discussion section.

Solution for social dilemmas: Sanctions

Social science deals with the question of how cooperation in a social dilemma can be enhanced (Eriksson, Garvill, & Nordlund, 2006). The implementation of a sanctioning system and therefore the prosecution of non-cooperative behavior is a widely used solution in order to overcome free-riding (Kosfeld, Okada, & Riedl, 2009) and is in line with the standard economic model of criminal behavior (Becker, 1968). The economic model states that before committing an offense, individuals evaluate the probability and consequence of getting caught and punished. Since individuals are assumed to seek maximizing their profits, they would always behave non-cooperative if monitoring and sanctions were absent (in the tax context see Allingham & Sandmo, 1972; Srinivasan, 1973). The implementation of sanctions is therefore seen as a key mechanism to ensure cooperation.

A meta-analysis provides empirical support for the effectiveness of sanctions on cooperation (Balliet, Mulder, & Van Lange, 2011). If a public goods game offers the opportunity to punish peers, contributions to the public good usually increase (e.g., Fehr & Simon, 2000; Milinski & Rockenbach, 2012). Imposing sanctions are discussed to be an applicable solution for even large-scale dilemmas (Kollock, 1998) and cooperation even increases when only others are charged for defection compared to when there are no costs to anyone (Eek, Loukopoulos, Fujii, & Gärling, 2002).

However, several studies have shown that coercion can also negatively affect cooperation, especially in the case of weak sanctions (Tenbrunsel & Messick, 1999). The implementation of sanctions can prompt people to think of a decision in business terms rather than in ethical terms, which in turn leads to less cooperation. With the introduction of sanctions, people doubt the good will of other community members, as the threat of sanctions make them aware that other members might defect and exploit the community. In this vein, the severity of sanctions applied by an authority can act as an indicator for the amount of selfish actors in the community (van der Weele, 2012). Further, coercive power can be perceived as a threat causing reactance instead of subordination (Kirchler, 2007).

Most of the empirical research regarding the influence of sanctions in social dilemmas has been undertaken in experimental games, such as public goods games or trust games. In a

public goods game, participants receive a fixed sum of money and have to choose whether to keep it (= defection) or to contribute to the public good (= cooperation; Bravo & Squazzoni, 2013) which is beneficial if everyone cooperates. Such laboratory experiments are mainly free of real life context.

However, empirical research demonstrated that the frame of a dilemma can influence the tendency to cooperate, even if the different situations had the same payoffs (Pillutla & Chen, 1999; Rege & Telle, 2004). Different concepts can be unconsciously activated by specific features of a social dilemma situation, for instance social norms, which are often guiding behavior (Biel & Thøgersen, 2007). Contradicting results of sanctions' effectiveness may be due to the impact of intervening variables and depend on the specific context of the social dilemma situation. Complementing the laboratory research on social dilemma using economic games, it seems necessary to examine and compare social dilemmas as they occur in everyday life.

Real world social dilemmas: Tax, insurance, public transport, waste disposal, music downloading

A widely researched social dilemma regulated by an authority is tax evasion. Paying taxes represents a social dilemma, as they finance public goods, which in turn are provided to citizens. If virtually no one pays taxes, public roads or public health cannot be provided. Empirical research suggests that the effect of audits and fines on tax compliance is more complex than assumed in standard economic models (Becker, 1968), as the effect of coercive power is often found to be smaller than theoretically expected and sometimes even opposite than intended (Andreoni, Erard, & Feinstein, 1998; Kirchler, Muehlbacher, Kastlunger, & Wahl, 2010).

Insurance fraud represents another social dilemma, as all customers of insurance companies are worse off if insurance fraud occurs often (Dean, 2004). Equally to tax evasion, many resources have been devoted to deterrence as the strategy of choice in addressing the problem of defection (Lesch & Brinkmann, 2011). Schiller (2006) and Derrig (2002) analyzed the impact of detection systems on insurance fraud and sanctions, as the threatened outcome of defection. Although sanctions for fraud do exist, insurance claim padding is highly accepted among customers (Miyazaki, 2009), which may also be due to the customers' perception that the risk of getting caught is low, and if caught, the punishment is modest (Dean, 2004).

The question of how to enhance cooperation is also a relevant issue for public transportation, where fare dodging is a well-known issue since self-service on trams and trains is common (Nahuis, 2009). The attitude of a person towards fare dodging is closely related to the perception of the risk of being caught and punished, which results in the assumption that it is important to increase the level of risk perception among the passengers (Barabino, Salis, & Useli, 2013). Passengers will cooperate if they are enforced to do so by authority's power (Wahl, Endres, Kirchler, & Boeck, 2011).

Environmentally friendly behavior represents a social dilemma as well (Pieters, Bijmolt, van Raaij, & de Kruijk, 1998), for instance, the decision to buy (collective social gain) or not buy (self-interest) green, and thus, often more expensive products (Gupta & Ogden, 2009), to recycle or not (Bratt, 1999) or to reduce personal car use (Nordlund & Garvill, 2003). In order to prevent harm by environmentally unfriendly behavior to other citizens, public institutions use sanctions as a means of deterrence (Epple & Visscher, 1984; Schramme, 2011). It is assumed that environmentally harmful behavior, like illegal waste dumping, is sensitive to the cost of legal disposal or reuse and to the threat of enforcement (Sigman, 1998). Almer and Goeschl (2013) argue that although enforcement via sanctions is widely regarded as central element for environmental policies, only limited evidence exists for its effectiveness. In the current study, we focus on illegal waste disposal as an example for environmentally harmful behavior.

Similar to tax evasion, insurance fraud and fare dodging, downloading copyrighted music from the internet without paying is an offense punishable by the law in most countries (Morton & Koufteros, 2008). Although theoretically it is assumed that engaging in illegal file sharing can be influenced through the perception of a possible punishment, empirical research on illegal music downloading shows that sanctions have a strong deterrent effect for certain consumers but can actually increase piracy tendencies for others (Morton & Koufteros, 2008; Sinha & Mandel, 2008).

Summarizing research on the effectiveness of sanctions in economic games as well as specific social dilemma situations lead to the assumption that social dilemma related factors need to be considered besides the size of sanctions. The impact of sanctions may differ in various social dilemma situations as intervening variables may get activated by relevant cues in the environment.

Social dilemma related factors impacting cooperation

Research on specific social dilemma situations provides findings for variables that influence cooperation besides sanctions. Based on past research on cooperation in real world social dilemmas, we identify four factors, which are supposed to influence the impact of coercive power (=authority's ability to apply sanctions) on cooperation: Social norms, legitimate power, evaluation of offense, and feelings of security (Figure 1). However, so far these variables have been studied relatively isolated from each other.

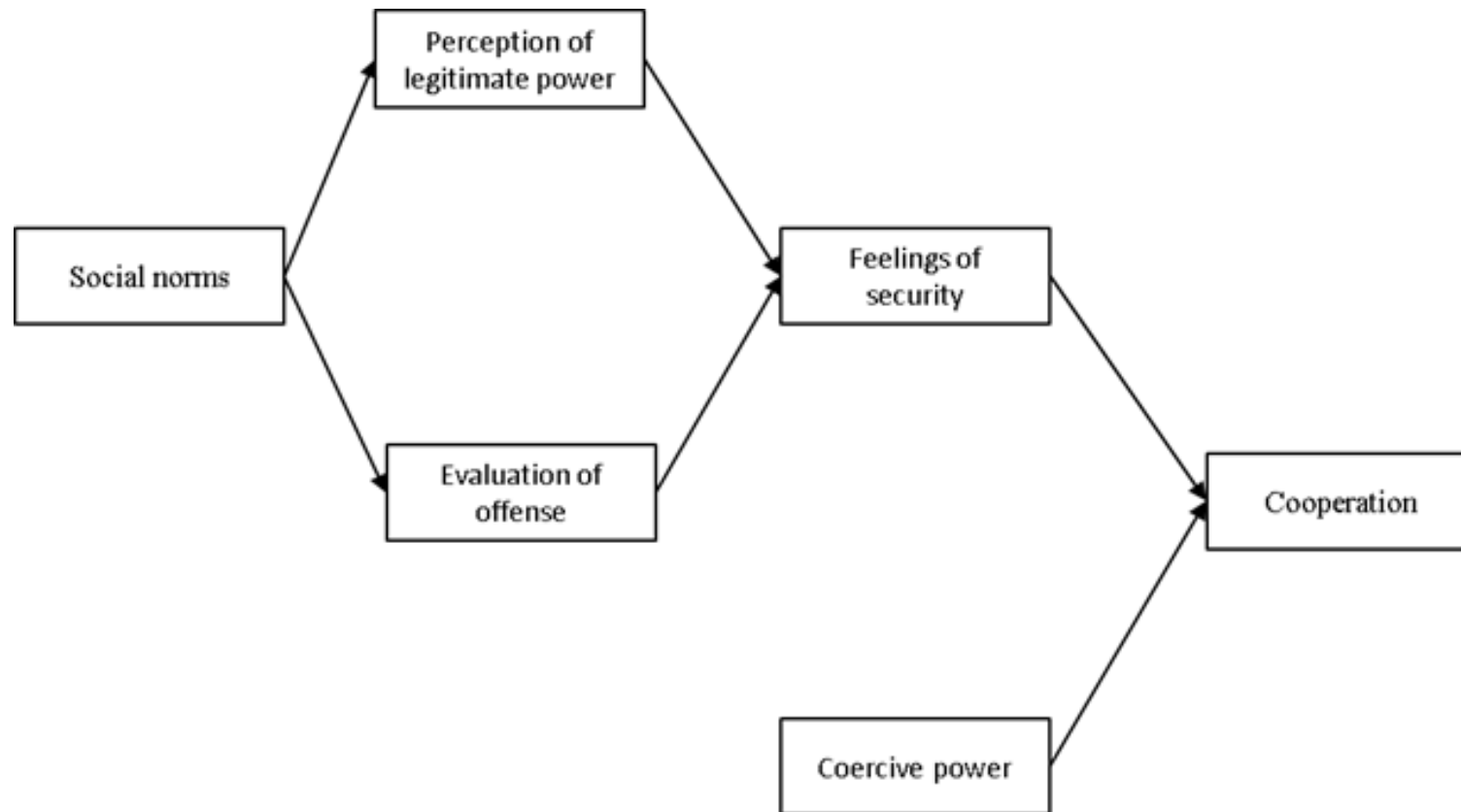
Social norms

Social norms are considered as guidelines for approved or disapproved behavior shared by a community (Injunctive norm; Kallgren, Reno, & Cialdini, 2000) and are based on shared beliefs how community members ought to behave in a given situation (Fehr & Fischbacher, 2004). Empirical research supports the assumption that cooperation is largely based on a social norm of conditional cooperation (Cialdini & Trost, 1998; Fehr & Fischbacher, 2004).

Concerning the impact of social influence on cooperation, a wide variety of tax research focuses on social norms as key variable of tax compliance (Alm, McClelland, & Schulze, 1999; Coleman, 2007; Cullis, Jones, & Savoia, 2012; Eldlund & Aberg, 2002; Wenzel, 2005a). Similar to tax compliance (Torgler, 2003; Wenzel, 2005b), social norms seem to be an important indicator of cooperation in other social dilemma situations as well, for instance concerning illegal file sharing (Cox, Collins, & Drinkwater, 2010; Cronan & Al-Rafee, 2008; Svensson & Larsson, 2012), use of public transportation (Bamberg, Hunecke, & Blöbaum, 2007; Carrus, Passafaro, & Bonnes, 2008), insurance fraud (Tennyson, 1997, 2008), or pro-environmental behavior (Bamberg & Möser, 2007; Chan, 1998; Cialdini, Reno, & Kallgren, 1990). The perception of what others perceive as appropriate behavior is relevant for the individual attitude and evaluation of non-cooperative behavior and could lead to differences in behavior between social dilemma situations due to varying perceptions of social norms (Thøgersen, 2008). The lack of social norms in some social dilemma situations may be an explanation why some offenses, as for instance illegal music downloading, are much more common than other defective behavior (Balestrino, 2008).

On the one hand, social norms are assumed to build the base of the perception of legitimate power, which goes beyond the perception of power stemming from a formal position (Raven, 1993). Further, socially agreed guidelines for approved behavior shared by a community affect individual's evaluation of non-cooperative behavior as an offense (Al-Rafee & Cronan, 2006).

Figure 1: Psychological factors to explain cooperation besides low/high coercive power.



Legitimate power

The application of legitimate procedures and therefore wielding legitimate power is found to be an effective tool for authorities to enhance cooperation (Gangl, Hofmann, & Kirchler, 2015; Turner, 2005). Exercising legitimate power ("soft power" in terms of Raven et al., 1998) rests upon the individual's conviction that authorities hold expertise and savvy information. Furthermore, it roots in the feeling of identification with an authority and its goals as well as in the perception that an authority is in a legal position that provides power over the individual (Gangl et al., 2015). Measures of legitimate power promise to be more effective in shaping individuals' behavior than severe sanctions (Tyler, 2006). For instance, participants in experiments are more responsive to the authority of an elected monitor than a randomly chosen monitor (Baldassarri & Grossman, 2011) and perceived legitimacy of an authority's power is an important determinant of cooperation with police force (Jackson et al., 2012; Jackson & Gau, 2015; Jackson, Huq, Bradford, & Tyler, 2013),

Coercive power in combination with legitimate power can be perceived as legitimate if audits are regarded to be undertaken by a lawful authority, acting for a valuable cause (Gangl, Hofmann, Hartl, & Kirchler, submitted). Coercion that is conducted in a consistent and fair manner is more effective than unfair coercion (van Prooijen, Gallucci, & Toeset, 2008; Verboon & van Dijke, 2011) and can be perceived as a safeguard (Gangl et al., submitted). If, however, sanctions are evaluated as unfair, they can destroy altruistic cooperation almost completely (Fehr & Rockenbach, 2003). Taxpayers who feel that the tax authorities use procedural justice during enforcement actions are also less likely to evade taxes and are less likely to feel anger (Murphy, 2009).

Evaluation of offense

The perception of a binding social norm of cooperation is not only likely to affect the perception of legitimate power, but also how non-cooperation is evaluated. If people perceive a binding social norm of cooperation, they are likely to think that freeriding is a serious offense, as one's own attitude towards an offense is shaped by expected beliefs of others (Al-Rafee & Cronan, 2006; Cubitt et al., 2011).

Research (e.g., Douhou, Magnus, & van Soest, 2011; Piquero, Carmichael, & Piquero, 2008; Traxler & Winter, 2012) indicates that individuals rate the seriousness of diverse offenses differently. For instance, the seriousness ranking of white collar crimes lies between property and violent crimes (Rosenmerkel, 2001). Insurance fraud is more acceptable than,

e.g., drinking a soft drink in a supermarket without paying it (Brinkmann & Lentz, 2006), which is in line with the assumption that even policyholders do not perceive insurance fraud as an illegal behavior (Miyazaki, 2009).

The evaluation of an offense as a predictor of cooperative behavior is found to be particularly important in the context of digital piracy (Cronan & Al-Rafee, 2008). Illegal file sharing has gradually become a widely accepted behavior (Svensson & Larsson, 2012), while shoplifting is evaluated as a more serious crime (Wingrove, Korpas, & Weisz, 2011), indicating that people engage in criminal activities, depending on the individual evaluations of the seriousness of an offenses (Tennyson, 1997). If people think of non-cooperative behavior as a serious crime, they are likely to support the application of coercive power in order to punish non-cooperative community members. People, who condemn an offense as an unacceptable act, will feel secure if an authority applies coercive power.

Feelings of Security

The concept of security has been applied to research on consumer decisions (Chang & Chen, 2009), close relationships (Luke, Sedikides, & Carnelley, 2012) or national security (Bartal, Jacobson, & Freund, 1995). In the context of social dilemmas, we define feelings of security as the extent to which people feel secure (vs. threaten) in a social dilemma situation as they do not have to fear that others might take advantage of them.

In this vein, individuals who act honestly may perceive a sanction system as a safeguard against non-cooperators and feel secure if an authority applies power. Research has shown that people often agree with the application of power in a social dilemma situation (Hartl, Hofmann, & Kirchler, submitted), and are even willing to bear costs for punishing free-riders (Fehr & Simon, 2000). Especially if people share the goal of cooperation but do not trust others to cooperate voluntarily, they are willing to contribute to a sanction system (Hartl et al., submitted; Yamagishi, 1986). A preference for formal sanctions may evolve due to a greater predictability and control over anti-social individuals (Putterman, Tyran, & Kamei, 2011). Lately, feelings of security induced by the perception of legitimate power are discussed to be positively related to cooperation in tax context (Gangl et al., 2015). If individuals in a community feel secure, they are likely to act in the interest of the community.

Overview of Studies

We assume that the impact of sanctions on contributions differs over social dilemmas in real life and that these differences rest upon dilemma related characteristics. The current research therefore aims at investigating the difference of impact of mild vs. severe sanctions for non-cooperation over different social dilemma situations (taxation, insurance, public transport, waste disposal, unauthorized download) and examining psychological factors to explain differences between social dilemma situations (social norms, perception of legitimate power, feelings of security, evaluation of offense), which have previously only been studied independently.

In order to answer the research questions, two experiments are conducted. The aim of Study 1 is to examine the effect of coercive power on cooperation in different social dilemma situations (taxation, insurance, public transport) in a laboratory experiment. Study 2 is designed to replicate the findings of Study 1 and to investigate psychological factors influencing the relationship between coercive power and cooperation. In contrast to Study 1, Study 2 uses an online questionnaire, manipulating coercive power and five social dilemma situations (taxation, insurance, public transport, waste disposal, music downloading). Two further social dilemma situations are implemented, as research has shown that public opinion on *waste disposal* and *music downloading* widely differs. While many people feel that there is nothing wrong about illegal downloading (e.g., Bonner & O'Higgins, 2010; Yu-Chen, Rong-An, & An-Kai, 2008), society's awareness of regarding environmental issues has risen for the past decades (Alsmadi, 2007; Mainieri, Barnett, Valdero, Unipan, & Oskamp, 1997). Nevertheless, both situations represent a social dilemma, as the personal interest of an individual (e.g., dispose waste in the landscape without paying a fee or download music without paying for it) is opposed to the interest of the community.

Study 1

Method

Participants

Participants were recruited on voluntary basis by leaflets as well as word of mouth. A total of 229 individuals (66.4% women; $M_{\text{age}} = 24.76$, $SD_{\text{age}} = 5.69$) participated. While 75.5% indicated a high school qualification for university entrance as highest completed education, 24.5% reported having a university degree.

Experimental design and procedure

Participants were randomly assigned to one of six groups in a 2 (*low coercive power* vs. *high coercive power*) x 3 (*tax* vs. *public transport* vs. *insurance*) between-subject design. After answering demographic questions they read a vignette that provided information about coercive power of an authority. In all six vignettes participants were facing a fictitious social dilemma situation and were asked to indicate whether they would cooperate (pay 40.00 EUR [49.72 USD] for a service in a given situation) or defect (not paying 40.00 EUR) and thereby agree to take the risk of being caught and fined. Audit probability was held constant at 15% in all conditions.

The decision in the *tax* condition was formalized by deciding to pay 40.00 EUR for a taxi fare to the airport during a private vacation or to evade this amount by falsely claiming these costs as business expenses to the tax authorities, thereby risking a fine in the amount of the respective coercion condition. In the *public transportation* condition participants faced the situation of either honestly paying a train ticket in the amount of 40.00 EUR or to evade the fare. The *insurance* condition was characterized by the decision to pay 40 EUR for the self-inflicted breakage of a glass window or to risk insurance fraud by reporting the breakage with an insurance agency.

In the *low coercive power* condition fines were set to 40.00 EUR (49.72 USD), and, respectively, to 160.00 EUR (198.86 USD) in the *high coercive power* condition. Additionally, this manipulation was strengthened by providing written information about authorities' application of coercive power. In the *low coercive power* condition it was emphasized that the authority was known for mild sanctions and assigns a low budget for financing audits, while in the *high coercive power* condition the opposite information was provided. After reading the vignettes, participants were asked to indicate whether they would pay the price (cooperate) or not (defection; binary choice item). Afterwards, participants indicated their perception of *coercive power* for manipulation check on a three items-scale (e.g., "The [respective authority] punishes severely", $\alpha = .72^2$), adapted from (Hartl, Hofmann, Gangl, Hartner-Tiefenthaler, & Kirchler, 2015). Participants were not remunerated

² All reliability analyses were additionally performed separately for the three decision contexts and revealed no major differences.

according to their decision in the experiment; but they participated in a lottery drawing with five Amazon.com gift cards in the amount of 10 EUR (approximately 12.43 USD).

Results

Preliminary data analysis

To check whether the experimental manipulation of low coercive power (cp_{low}) versus high coercive power (cp_{high}) worked as intended, a two-way ANOVA was calculated with coercive power and social dilemma situation (*tax, insurance, public transport*) as independent variables and the manipulation check scale as dependent variable. The manipulation was successful as low (cp_{low}) and high (cp_{high}) levels of coercive power were perceived according to the manipulation ($F(1, 223) = 17.03, p < .001, \eta^2 = .07$; cp_{low} : $M = 4.30, SD = 1.22$; cp_{high} : $M = 4.93, SD = 1.16$). Additionally, coercive power was perceived differently between social dilemma situations ($F(2, 223) = 8.61, p < .001, \eta^2 = .07$). A post-hoc test revealed that the *public transportation agency* was perceived as more coercive ($M = 5.03, SD = 0.13$) than the *tax authority* ($M = 4.58, SD = 0.13$) and the *insurance agency* ($M = 4.25, SD = 0.13; p < .05$). No interaction effect of coercive power and social dilemma situation was found ($p > .05$).

Cooperation

To test whether cooperation differs according to experienced *coercive power* and *social dilemma situation*, a binary logistic regression was calculated (Table 1). The overall model evaluation indicated that the predictors successfully distinguish between cooperation and defection ($\chi^2(3, N = 229) = 22.78, p < .001$). The model predicted 73.8% of the responses correctly (32.8% for evasion and 89.7% for cooperation) with a Nagelkerkes $R^2 = .14$. The Wald criterion showed that the *coercive power* manipulation reveals significant ($p < .001$) with $OR = 3.28$, suggesting that those experiencing *high coercive power* were three times more likely to be cooperative than those experiencing *low coercive power*. The social dilemma situation was entered into the model using dummy variables. Results indicated that participants in the *insurance* condition were significantly less cooperative ($p = .03$), while *tax* and *public transportation* were not significantly different from each other ($p = .53$). Absolute frequencies for all six conditions are given in Table 2.

Table 1: Study 1 ($N = 229$). Summary of binary logistic regression analyses for variables predicting compliance.

Variable	B	$SE(B)$	Wald	Sig.	Exp(B)
Constant	0.66	0.29	5.01	.03	1.92
Coercive Power	1.19	0.32	13.56	< .001	3.28
Public Transportation Agency	0.25	0.40	0.39	.53	1.28
Insurance Agency	-0.80	0.37	4.75	.03	0.45

Note. Model $\chi^2 = 22.78$, $p < .001$. R^2 (Nagelkerkes) = .14. The dependent variable is coded 0 = defection and 1 = cooperation. Coercive power is coded 0 = *low coercive* and 1 = *high coercive*. Dummy variables were introduced in order to enter the three different decision contexts into the regression model, with the *tax authority* condition as reference category.

Table 2: Study 1 ($N = 229$). Cross table of cooperation according to levels of coercive power and social dilemma situation.

Intended behavior	Tax authority		Public transportation agency		Insurance agency	
	Low coercive	High coercive	Low coercive	High coercive	Low coercive	High coercive
Cooperation	28	32	17	28	26	34
Defection	12	7	21	9	12	3

Discussion

Study 1 showed that if an authority in a social dilemma wields coercive power, cooperation increases. Nevertheless, level of cooperation differed across social dilemma situations, as participants in the insurance condition are significantly less cooperative than in the tax condition or public transport condition.

Study 2

Method

Participants

An online questionnaire was completed by a convenience sample of 397 participants. Out of this sample, two participants under 16 years and four people, who indicated that they had not answered the questions seriously and honestly, were excluded. The final sample consisted of 391 participants (64,5% men, $M_{\text{age}} = 31.06$ years, $SD_{\text{age}} = 12.80$). The majority of participants (72,2%) earned less than 2,000 Euro per month.

Experimental design and procedure

In a 2 (*low coercive power* vs. *high coercive power*) x 5 (*tax, insurance, public transport, waste disposal, music downloading*) between-subjects design, participants were randomly assigned to one of ten conditions. Again, participants were facing a fictitious social dilemma situation in which they had to decide whether to cooperate (by paying 40.00 EUR [49.72 USD]) or to defect (not paying 40.00 EUR) and thereby agree to take the risk of being caught and fined. Audit probability was held constant at 15% in all conditions.

The decision in the social dilemma situation *tax, insurance* and *public transport* was similar to Study 1. In the *waste disposal* condition participants faced the situation of either paying 40.00 EUR honestly for the disposal of a refrigerator or to improperly dispose it on a landfill. The *music downloading* condition was characterized by the decision to pay 40.00 for a CD collection or to illegally download the music from the Internet and burn them to CD.

Again, in the *low coercive power* condition fines were set to 40.00 EUR (approximately 49.72 USD), and to 160.00 EUR (approximately 198.86 USD) in the *high coercive power* condition. Additionally, this manipulation was strengthened by providing written information about authorities' coercive power. After reading the vignette, participants were asked to indicate whether they would decide to cooperate or defect. Rather than on a binary choice item (as in Study 1), cooperation was measured on a 7-point Likert Scale.

Next, participants indicated their perception of *coercive power* for manipulation check ($\alpha = .73$), the perception of *legitimate power* ($\alpha = .85$), feelings of *security* obtained by authorities' coercive power ($\alpha = .82$). Further, participants had to indicate their perceived *social norm* ("In general, citizens think that all income should be declared honestly"; adapted from Rechberger, Hartner, and Kirchler (2009)) and to rate the seriousness of different offenses (e.g., laundering money, shoplifting, or not paying radio license fees) on a 7-point Likert Scale³ (*evaluation of defection*). Out of these thirteen offenses, five referred to the social dilemma situations used in Study 2 (e.g., insurance fraud). Only the evaluation of the offense corresponding to the scenario received in the beginning was used for data analysis.

At the end of the questionnaire, demographic variables were assessed and participants had to indicate whether they responded to the questions seriously and honestly.

Results

Preliminary data analyses

To check whether the manipulation of intensity of coercive power was successful, an ANOVA was performed with coercive power and social dilemma situation as independent and the perception of coercive power as dependent variable. The results showed that the manipulation was successful as low (cp_{low}) and high (cp_{high}) levels of coercive power were perceived according to the manipulation ($F(1, 381) = 61.38, p < .001, \eta_p^2 = .14$; cp_{low} : $M = 3.40, SD = 1.43$; cp_{high} : $M = 4.49, SD = 1.37$). Additionally, the analysis revealed a significant main effect of social dilemma situation, indicating that coercive power was perceived differently between social dilemma situations ($F(4, 381) = 5.13, p < .001, \eta^2 = .05$). A post-hoc test revealed that the *tax authority* was perceived as more coercive ($M = 4.37, SD = 1.37$) than the *insurance agency* ($M = 3.83, SD = 1.56; p = .02$), the *waste agency* ($M = 3.48, SD = 1.55, p < .001$) and the *music industry* ($M = 3.76, SD = 0.13; p = .007$). Further, the *public transport agency* ($M = 4.26, SD = 1.39$) was perceived as more coercive than *waste agency* ($p < .001$) and the *music industry* ($p = .015$). No interaction effect of coercive power and social dilemma situation was found ($p > .05$).

³ 1 = not at all serious; 7 = very serious; Participants additionally had the option to indicate if they don't know the concerned offence at all („I don't know the offense“)

Cooperation

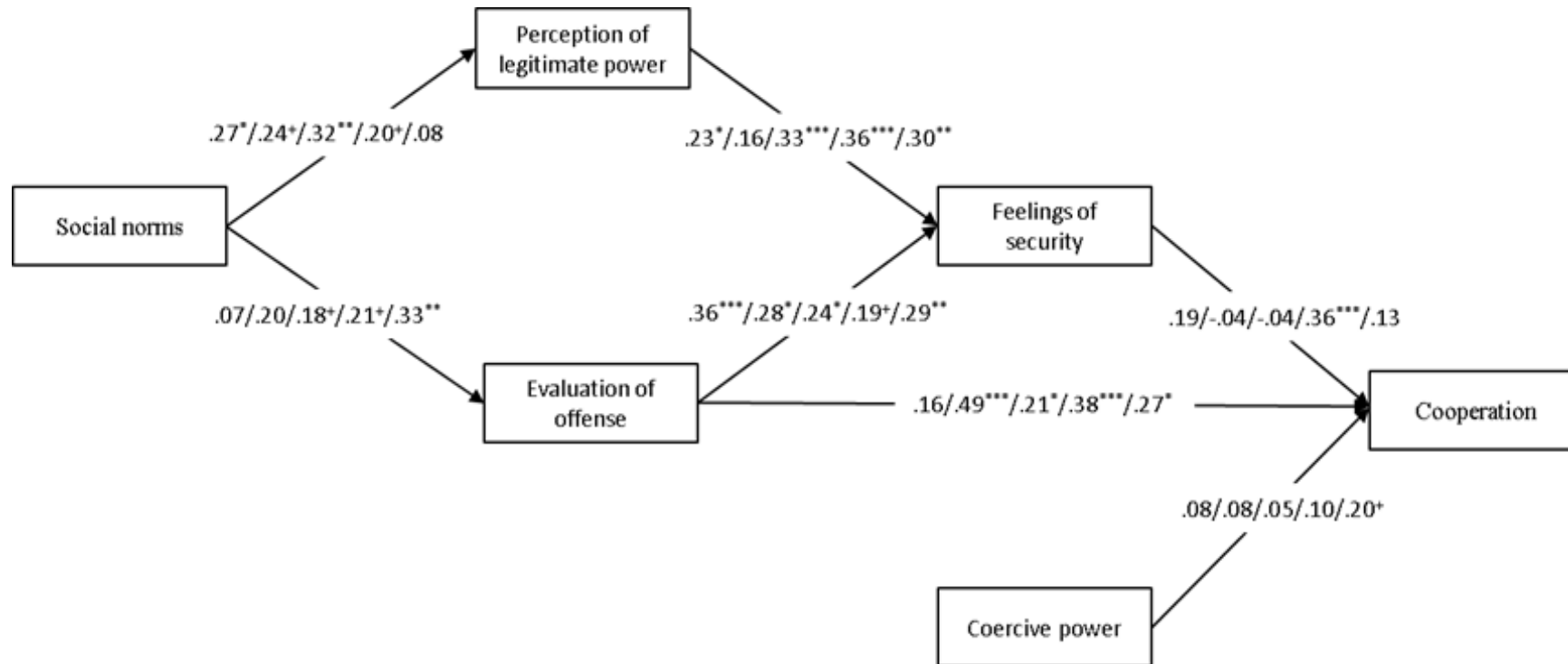
To test whether cooperation differs according to the manipulation of coercive power and social dilemma situation, an ANOVA was conducted. The analysis revealed a significant main effect of coercive power ($F(1, 381) = 6.68, p = .01, \eta_p^2 = .02$). Coercive power leads to higher levels of cooperation (cp_{low} : $M = 5.51, SD = 2.22$; cp_{high} : $M = 6.05, SD = 1.83$). Further, a significant main effect of social dilemma situation resulted ($F(1, 381) = 17.28, p < .001, \eta_p^2 = .15$), but no significant interaction effect ($p = .58$). A post hoc test shows that participants are significantly less compliant when it comes to music downloading ($M = 4.38, SD = 2.40$) than taxpaying ($M = 5.72, SD = 2.13; p < .001$), insurance ($M = 5.72, SD = 2.20; p < .001$), public transport ($M = 6.67, SD = 0.99; p < .001$) and waste disposal ($M = 6.23, SD = 1.65; p < .001$). Further, participants in the public transport scenario were more compliant than in the taxpaying ($p = .001$) and insurance ($p = .002$) scenarios.

Model of psychological processes explaining differences between social dilemma situations

Investigating the different psychological processes underlying the decision whether to cooperate or not in the five social dilemma situations (taxpaying, insurance, public transport, waste disposal, and music downloading) a structural equation model (AMOS 18; Arbuckle, 2009) was applied. An unconstrained model test taking into account the five different social dilemma situations was tested (multi-group analysis). It showed that the proposed model regarding the underlying psychological factors explains data well, if a direct relation between evaluation of offense and cooperation is included ($CMIN(40) = 51.64, p = .10, CMIN/df = 1.29, RMSEA = .03, CFI = .93$)⁴. For CMIN/df a value below 2 indicates a good fit (Hair, Anderson, Tatham, & Black, 1998). Also, the CFI, above .90, is an indicator for a good fit (Byrne, 1998). Thus, taking into account the five different social dilemma situations, the proposed model of social norms, perception of legitimate power, the evaluation of offense, feelings of security and additional coercive power explained cooperative behavior. Figure 2 depicts β -values for each social dilemma situation.

⁴ The model fit for the model without the direct effect between evaluation of offence and cooperation is substantially worse than with the effect ($CMIN(45) = 92.24, p < .001, CMIN/df = 2.05, RMSEA = .05, CFI = .72$).

Figure 2: β -values for the modeled relations of intervening factors and coercive power with cooperation for five social dilemma situations.



Note: taxpaying/insurance/public transportation/waste disposal/music download; + ... $p < .10$, * ... $p < .05$, ** ... $p < .01$, *** ... $p < .001$

Although the β -values for specific relations differed essentially over social dilemma situations, the critical ratios for differences between parameters revealed only few significant dissimilarities. The relation between social norms and evaluation of offense differed significantly in the taxpaying situation ($\beta = -.07, p = .57$) from the music downloading situation ($\beta = -.33, p < .01$). Further, the direct connection from evaluation of offense to cooperation differed significantly between the taxpaying situation ($\beta = .16, p = .20$) and the insurance situation ($\beta = .49, p < .001$), the insurance situation ($\beta = .49, p < .001$) and the public transport situation ($\beta = .21, p < .05$), and finally the public transport situation ($\beta = .21, p < .05$) and the waste disposal situation ($\beta = .38, p < .05$). Additionally, the β -value for the relation between feelings of security and cooperation significantly differed in the waste disposal situation ($\beta = .36, p < .001$) from the insurance situation ($\beta = -.04, p = .71$) and from the public transport situation ($\beta = -.04, p = .70$). All other critical ratios for differences between β -values among the specific social dilemma situations fell between -1.96 and +1.96, indicating no significant differences.

Discussion

In line with Study 1, Study 2 revealed that with severe sanctions participants were more likely to be cooperative and that cooperation differed over contexts. In Study 2, cooperation in the unauthorized music download context was the lowest and in the public transport context the highest. Examining the intervening factors of coercive power on cooperation, the impact of coercive power became insignificant; cooperation was rather predicted by participants' evaluation of the offense and feelings of security, which is related to legitimate power of the authority that again is related to social norms. The strength of these relations differed over social dilemma situations (*tax, insurance, public transport, waste disposal, music downloading*).

General Discussion

The opportunity to sanction non-cooperative behavior has been studied theoretically and empirically as an important mechanism to stabilize cooperation in social dilemma situations. Contradicting results lead to the assumption that other social dilemma related factors need to be considered besides the application of sanctions.

In the current article, results of both a laboratory experiment and an online experiment revealed that with severe sanctions participants were more likely to be cooperative and that absolute levels of cooperation differed over social dilemma situations. In Study 1 participants

complied more often in the insurance than in the taxation and public transport contexts, while in Study 2 cooperation was the lowest in the unauthorized music download context and the highest in the public transport context. Examining intervening factors in Study 2 to explain context differences, the impact of coercive power becomes insignificant; cooperation is rather predicted by participants' feeling of security that is related to legitimate power of the authority that again is related to social norms.

The impact of social norms on evaluation of offense, the effect of evaluation of offense on cooperation, and the impact of feelings of security on cooperation differed between social dilemma situations (*tax, insurance, public transport, waste disposal, music downloading*). First, although social norms significantly impact the evaluation of illegal music downloading as expected, social norms do not affect the individual evaluation of tax evasion. This finding may be due to the complexity of social norms in the context of taxpaying. Bobek, Hageman, and Kelliher (2013) have shown that individuals' personal norms as well as the expectations of others (subjective norms) directly influence tax compliance decisions, whereas general societal expectations (injunctive norms) have an indirect influence. A more complex concept of social norms should therefore be considered in future research, e.g., by distinguishing and measuring different constructs of social norms.

Second, the evaluation of offense seems to be an important predictor of cooperation in nearly every social dilemma situation, but the strength of the relation differs. Particularly the intention to commit insurance fraud depends on whether individuals evaluate it as a serious crime. These findings are in line with earlier research investigating consumers attitudes towards insurance fraud (Tennyson, 1997, 2008).

Third, feelings of security are important predictors of cooperation when it comes to illegal waste disposal, but seem irrelevant for cooperation in the context of insurance fraud and fare dodging. The importance of security concerns in the context of waste disposal may be due to ongoing political and medial debates about environmental issues, like global warning, the energy crises and pollution (cf. Weingart, Engels, & Pansegrau, 2000). Reports in mass media about ecological changes may have raised public concerns about the importance of cooperative behavior in environmental dilemma situations and therefore security feelings are more important for cooperation in comparison to other social dilemma situations. This assumption certainly needs to be investigated further.

Although, the current studies certainly have their merits, there are some limitations that should be considered in further research. In both the laboratory experiment and the online experiment, the decision to cooperate or not was solely based on the description of an

authority. Cooperation was unrelated to the well-being of the ‘society’ in the fictitious situation, which does not fully represent the situation people experience in real life social dilemmas. This needs to be addressed in future experiments by assessing not only intended, but actual cooperation. Due to the design of the current study, we were not able to take into account possible interactions between the community members and the authority wielding coercive power. For instance, if an authority applies severe sanctions, individuals might render stronger moral judgments with regard to non-cooperation (Mulder, Verboon, & De Cremer, 2009). If individuals on the other hand condemn an offense as a crime, they may claim more severe punishment for non-cooperation. It would be of interest for future questionnaire studies and field experiments to especially consider this in different social dilemma situations.

Results of the current study provide important implications for further research. They show that it is necessary to apply research using public goods games to real world social dilemma situations by taking into account specific dilemma related factors. Complementing the laboratory research on social dilemma using economic games, future research should continue to actively apply social dilemma insights to understand cooperative behavior in political decisions, pro-environmental decisions (Joireman, 2005), consumer decisions (Hartl et al., submitted), taxpaying, and insurance (Hofmann, Hartl, Gangl, Hartner-Tiefenthaler, & Kirchler, submitted).

Furthermore, the results have important implications for public policy. The vast majority of research on the effectiveness of sanctions has been based on peer punishment, although in modern societies, peer punishment by personally reprimanding non-cooperators is rare (Traulsen, Roehl, & Milinski, 2012). Most societies today have implemented central authorities wielding coercive power to punish free riders (Hilbe, Traulsen, Roehl, & Milinski, 2014), e.g., tax authorities audit and fine tax evaders, insurance agencies try to detect insurance fraud, and control mechanisms of public transport agencies should prevent fare dodging. Laboratory experiments have shown that participants voluntarily implement such sanctioning institutions (Kosfeld et al., 2009), maybe due to the perception that formal sanctions are more reliable and equitable than informal sanctions (Putterman et al., 2011). Although sanctions have been proven to be a useful tool to enhance cooperation in public good games, which is in line with our results as a principal mechanism, it seems that cooperation can be increased most effectively by specific social dilemma related factors, as for instance, social norms or evaluation of offense. As deterrence in terms of audits and sanctions is costly, requiring extensive human and physical resources (e.g., Lesch &

Brinkmann, 2011), and large fines should be utilized only when absolutely necessary (Jiang, Perc, & Szolnoki, 2013), strategies to emphasize the perception of high social norms could be considered (e.g., by voting or group communication; Alm et al., 1999).

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Publication 7

Hofmann, E., Hartl, B., & Penz, E. (submitted). Sharing a car - from a company or a community? Collaborative consumption models differing in power and trust.

Abstract

Purpose – Collaborative consumption, such as car sharing, comes in many forms. Contrasting the most divergent, i.e., companies and self-regulating communities, shows differences in relations between service providers and consumers. While in conventional business relations consumers are protected by legal rules from misconduct, regulations in the context of collaborative consumption are rare, so that trust can become more relevant.

Design/methodology/approach – A sample of 186 consumers filled in an experimental online questionnaire for analysis of differences between car sharing companies and car sharing communities in power of providers, trust and interaction climates.

Findings – Results reveal that companies and self-regulating communities differ in their relations with consumers. While companies are clearly characterized by a service attitude, communities function rather in a confidence climate. The models additionally differ over perceived power and trust; solely cooperation does not significantly vary over the two models.

Originality/value – This study is one of the first to investigate relations of providers of collaborative goods and consumers. It highlights challenges for companies in contrast to self-regulating communities and as such provides important implications for both, researchers and managers.

Keywords: collaborative consumption, consumer-provider relation, power, trust, cooperation

Article Classification: Research paper

1. Introduction

Over the last years, consumers engage more and more in collaborative consumption; a concept, which has emerged in times of increased concern for the wake of the economic crisis and the environment. In collaborative consumption not the ownership of a good is of relevance but the access to a good (Belk, 2014; Botsman & Rogers, 2010). For instance, consumers make use of car sharing companies, like Zipcar. Such companies offer a unique service, they facilitate access to goods for consumers by allowing for more choice, lower prices and quality services (Koopman, Mitchell, & Thierer, 2014). Zipcar's customers have access to a fleet of different car models in North America and Europe for a yearly fee. They just unlock the car, which they previously have booked over an internet platform, use it for a few hours and bring it back where they have received it. Zipcar is taking care of fuel, insurance as well as regular services; customers have the privilege to use the newest models of cars, but do not have the hassle of maintenance. Additionally, the cars are far more often operated than when they were owned by just one single person. Several start-ups that facilitate collaborative consumption services have become exceptionally successful enterprises and a growing economic factor, e.g., Airbnb, Uber, Zipcar, etc. Zipcar, e.g., has been acquired by the well-known rental car company Avis for 500 million USD in 2013 (Forbes, 2013).

Due to the popularity of collaborative consumption, the supply of collaborative consumption services is not restricted to conventional business-to-consumer models. More and more consumer networks are created to share resources, providing new challenges for the market. Consumers can engage in collaborative consumption in different ways, ranging from models in which companies organize the collaborative access to a good, to models in which self-regulating communities arrange this access. In this vein, it can be differentiated between different providers, i.e., business-to-consumer vs. consumer-to-consumer (Möhlmann, 2015), and different market orientation, i.e., providers working for profit and non-profit (Schor & Fritzmaurice, 2015). Consumers can choose between these different forms of collaborative consumption such, i.e., between extremes like car sharing using the company Zipcar's service (business-to-consumer) or sharing within self-regulating communities (consumer-to-consumer), e.g., neighbors sharing a car. At the first type, obvious providers exist that make profit from collaborative consumption, and they fully take over organization and also legal liability. At the latter type, providers are communities of consumers which operate on a non-profit basis, and the communities themselves are the organizing providers, however, mostly legally unregulated (Owyang, Tran, & Silva, 2013; Schor & Fritzmaurice, 2015). These two

forms differ in several features, e.g. the ability of the provider to punish misbehavior or reward virtuous conduct as well as consumers' trust in the provider and in fellow user of the collaborative good. Due to the difference in power and trust, also the resulting relationship between service provider and consumer might differ. Different business models characterized by power and trust create specific interaction climates between these actors. In order to investigate and compare consumer-provider relationships in different collaborative consumption models, the paper applies the concept of interaction climates from governance research (Gangl, Hofmann, & Kirchler, 2015). This approach allows a differentiated understanding of the consumer-provider relationship, which is an important determinant of business success (cf., Coulter & Coulter, 2002; Dwyer, Schurr, & Oh, 1987; Mason & Simmons, 2012). Further, different collaborative consumption models with specific combinations of power and trust and resulting interaction climates might attract certain consumers. It can be assumed that consumers who decide to take part in a specific form do so because of these specific features.

The current study contrast two types of collaborative consumption: Business-to-consumer relations and self-regulating communities (Birky & Strom, 2013; Schor & Fritzmaurice, 2015). Specifically, these two models characterize the most diverging types of collaborative consumption: The first including a company, bound to legal rules working for profit, the second comprising a community of consumers, not legally regulated and focusing on consumers' need satisfaction but not on profit maximization. We discuss (1) how these two forms of collaborative consumption differ in power of providers and trust in these providers and in other users, and most interestingly, (2) which interaction climates between providers and consumers prevail.

This study contributes to the existing literature, not only by examining very diverse forms of collaborative consumption, but also by investigating different actors (companies, communities, users of the good) and their part in collaborative consumption (Cohen & Kietzmann, 2014). The study thereby points out the challenges collaborative consumption holds for service providers. Further, to our knowledge, we are the first to investigate trust, a very important aspect in service marketing (cf. Kharouf, Lund, & Sekhon, 2014) and especially in the collaborative consumption context (Möhlmann, 2015), by distinguishing between trust in providers of the services and in other users of them. We apply a scenario based, experimental online questionnaire to investigate whether in business-to-consumer relations (using the example of a car sharing company) and in self-regulation communities (using the example of a housing community sharing a car) power, trust and interaction

climates differ. The results allow for insights into consumers' preferred structure of collaborative consumption models. Recommendations for businesses as well as collaborative consumption communities are discussed. With this research we provide a strong basis for (political) regulation of collaborative consumption (Koopman et al., 2014; Rauch & Schleicher, 2015).

2. Collaborative consumption models

Definitions of the term 'collaborative consumption' are manifold and vague. Collaborative consumption occurs when consumers have access to a good without owning this good (Bardhi & Eckhardt, 2012). For instance, consumers use the service of a car sharing company, which resembles the marketplace exchange, or share a car in a housing community, which corresponds with sharing. As such, collaborative consumption is positioned on the "middle ground between sharing and marketplace exchange, with elements of both." (Belk, 2014, p. 159). Contrary to sharing, collaborative consumption is not necessarily altruistic or prosocial, but is rather underlined by economic exchange (Bardhi & Eckhardt, 2012). Nevertheless, the term "sharing economy" (Heinrichs, 2013) is often used synonymously for "collaborative consumption", whereas "access-based consumption" (Bardhi & Eckhardt, 2012) contains elements of both collaborative consumption and sharing (Belk, 2014; Mont, 2004; Schor & Fitzmaurice, 2015). The concept of "collaborative consumption" is also related to anti-consumption (Albinsson & Perera, 2012) as the sharing of resources reduces the consumption of new goods, for instance, in toy lending libraries (Ozanne & Ballantine, 2010; Ozanne & Ozanne, 2011).

With the rise of collaborative consumption a new group of consumers emerged. Whereas a great majority of consumers engage in collaborative consumption actions because of environmental concerns, many consumers appreciate the benefits of collaborative consumption because of economic reasons (Tussyadiah, 2015). The motifs for consumers to engage in collaborative consumption, i.e., environmental reasons or to save money, might be reasons for the attractiveness of different models of collaborate consumption.

In the current article we contrast two models of collaborative consumption (Schor & Fitzmaurice, 2015): (a) business-to-consumer models, that allow consumers to share a specific good provided by a company for a fee (Cohen & Kietzmann, 2014; Lamberton & Rose, 2012), and (b) consumption from self-regulating communities, in which a group of consumers purchase goods and share the utilization of the goods (Cohen & Kietzmann, 2014;

Ozanne & Ballantine, 2010). These models differ in several features: measures which providers use to handle interaction, attitudes towards and opinions of these providers, views of other collaborative users, the interaction process of providers and users, etc.

With collaborative consumption specifically, not only trust in the suppliers of services and goods, which are often encountered over the internet (Germann Molz, 2013), but also in other collaborative users is important (Schor & Fritzmaurice, 2015). Due to the collaborative aspect of this form of consumerism, users have to take care that the goods or services are still in good order and ready to use for others, even if they themselves do not need them any longer. Companies organizing collaborative consumption use different measures in order to ensure appropriate use and cooperation with communities (Germann Molz, 2013; Jiang & Tian, 2015; Schor & Fritzmaurice, 2015). Depending on the characteristics of the model of collaborative consumption different power measures and lines of trust might be operating.

3. Power and trust

In Business-to-consumer relations as well as in self-regulating communities providers have different measures to make consumers behave cooperatively, i.e., different qualities of power such as coercive power and legitimate power. These qualities of power go hand in hand with different qualities of trust in the organizing provider and in fellow users, i.e., automatic and well considered trust, such as implicit and reason-based trust. While trust between marketers and consumers is important in most business relations, for collaborative consumption the trust of consumers in other users of the collaborative services or goods is additionally essential (Bhattacharjee, 2002; Melnik & Alm, 2002; Möhlmann, 2015; Sangmi, Das, & Rao, 2011).

Business-to-consumer relations are by their nature (having a company as an organizing provider) characterized by several measures to determine consumers' behavior. On the one hand, they can sanction unwanted behavior and reward wanted behavior, e.g., with cancelation fees (Brook, 2004), using positive and negative re-enforcers based on the theory of operant conditioning (Skinner, 1948). On the other hand, companies offer support and services making it easy for consumers to cooperate (see, e.g., Jenny, Fuentes, & Mosler, 2007; Umit Kucuk & Krishnamurthy, 2007). With this, companies are perceived to hold legitimacy and expertise, and to represent an organization to identify with, which influences consumers' behavior. In the terminology of the theory of social power the first quality of power comprises

harsh or coercive power and the second soft or legitimate power (Gangl et al., 2015; Raven, Schwarzwald, & Koslowsky, 1998). We assume that in business-to-consumer relations companies hold some coercive power, to punish uncooperative users of the goods or services, but also grant them special rewards for exceptionally virtuous conduct, e.g., by handing out discounts and other incentives. Additionally they certainly apply legitimate power, i.e., they are in the position to wield power, have the expertise in proficient handling, hand out information regarding conduct and based on the nature of goods and services as well as marketing might be an institution to identify with.

Self-regulating communities are by definition characterized by very little power or no power at all (Owyang et al., 2013). Without any appointed provider such as a company or an individual private person there is no provider to actually wield power independently, neither coercive power nor legitimate power. Additionally, by missing legal regulation the community as an indistinct provider does not have measures to determine consumers' behavior (Owyang et al., 2013). There are neither binding forms of punishment for misbehavior, nor binding rewards, and therefore no coercive power is wielded. Legitimate power, on the other hand, is independent of legal rules, therefore it could be present in self-regulating communities. But as no appointed providers exist, consumers cannot attribute legitimate power to a specific person.

Hypothesis 1.1

Coercive power is stronger perceived in business-to-consumer relations than in self-regulating communities.

Hypothesis 1.2

Legitimate power is stronger perceived in business-to-consumer relations than in self-regulating communities.

In *business-to-consumer relations*, as in most conventional business interactions, trust in providers is an important characteristic of good business relations and a predictor for the satisfaction with the relationship (Möhlmann, 2015; Papadopoulou, Andreou, Kanellis, & Martakos, 2001; Pennington, Wilcox, & Grover, 2003). We assume that in such business relations consumers hold reason-based trust towards the businesses. Reason based trust origins in a rational decision process, in which consumers assess whether the company shares their goals, is benevolent and motivated in pursuing these goals, and whether there are no external factors hindering but several fostering the achievement of the goal (Castelfranchi &

Falcone, 2010; cf., Kharouf et al., 2014). The providers' legitimate power, i.e., expertise, information, etc., offers some reasons to trust (see, e.g., Umit Kucuk & Krishnamurthy, 2007). Trust does not only origin from an elaborate decision process, but can be triggered by simple cues (Castelfranchi & Falcone, 2010); such automatic or implicit trust can develop over time in a long-term business-to-consumer relation, but is not common in short-term relations (Schor & Fritzmaurice, 2015).

Based on the *self-regulation* nature of the *community*, relations with people of similar interests and values should establish reason-based trust in the communities, i.e., indistinct providers. Thus, reason-based trust in the provider exists in communities. But particularly the non-existence of power in self-regulating communities is an excellent environment to cultivate implicit trust in the community (Schor & Fritzmaurice, 2015). It can be assumed that communities without wielding any qualities of power, and additionally comprising consumers holding very low implicit trust in the provider, would collapse very soon (Owyang et al., 2013), because there were no force available to hold the community together.

Hypothesis 2.1

Reason-based trust in the provider is stronger in business-to-consumer relations than in self-regulating communities.

Hypothesis 2.2

Implicit trust in the provider is stronger in self-regulating communities than in business-to-consumer relations.

In *business-to-consumer relations* interactions between consumers are limited and the company acts as an intermediary, regulating users' reliabilities and rights to the goods. With this in mind consumers have profound reasons to trust in other users, and therefore reason-based trust in other users should prevail in business-to-consumer relations. Nevertheless, over time and after several good experiences, reason-based-trust can change into implicit trust (Castelfranchi & Falcone, 2010), thus few but some implicit trust in other users of the goods might exist in business-to-consumer relations.

Based on the 'sharing' nature of collaborative consumption in *self-regulating communities*, we assume that consumers trust not only in providers organizing collaborative consumption but more importantly in other consumers using the same services and goods (Bhattacharjee, 2002; Melnik & Alm, 2002; Möhlmann, 2015; Sangmi et al., 2011). Being part of such a sharing group, sharing norms and values, certainly provides reasons to trust

other users (Schor & Fritzmaurice, 2015). Thus, in self-regulating communities, reason-based trust in other users prevails. Additionally, the regularity of the interaction with other users suggests that interpersonal relationships of community members are long-lasting which allows the progress from reason-based trust into implicit trust (Gangl et al., 2015; Schor & Fritzmaurice, 2015). Therefore, we assume that consumers in self-regulating communities trust other users; they hold reason-based trust and implicit trust.

Hypothesis 3.1

Reason-based trust in the other users of the goods and services is stronger in self-regulating communities than in business-to-consumer relations.

Hypothesis 3.2

Implicit trust in the other users of the goods and services is stronger in self-regulating communities than in business-to-consumer relations.

4. Cooperation

Self-regulating communities, as well as companies organizing collaborative consumption face the problem of uncooperative customers. As earlier studies (e.g., Jiang & Tian, 2015) have shown consumers can exploit other users of the collaborative goods by returning it late or by not taking care of the good. Both companies and communities therefore need to ensure appropriate use of goods and services. We assume that the level of cooperation in both collaborative consumption models is similar and that only the power and trust in the collaborative consumption models differ.

Hypothesis 4

Cooperation is similar in business-to-consumer relations and in self-regulating communities.

5. Consumer-provider relationship

As collaborative consumption models differ in the related qualities of power and trust, it we assume that also the consumer-provider relationships vary. The different characteristics of both collaborative consumption models might lead to different types of interaction climates between providers and consumers, which is an important criteria for consumers' decision

whether to engage in collaborative consumption or not. In order to examine differences between business-to-consumer models and self-regulating communities regarding the resulting consumer-provider relationship, research on governance (Gangl et al., 2015) offers a useful distinction, postulating three different interaction climates between authorities and individuals: the antagonistic climate, the service climate and the confidence climate (Alm & Torgler, 2011; Gangl et al., 2015). The antagonistic climate is characterized by coercive power and distrust between authorities and individuals. Authorities perceive individuals as defecting and prosecute them, and respectively individuals hide and act uncooperatively if possible. A service climate comprises a formal and well organized relationship in which authorities provide excellent service to make cooperative behavior much easier for individuals than engaging in defection. In the confidence climate mutual trust between authorities and individuals exists. Both work for the benefit of the community and feel a moral obligation to cooperate. We assume that business-to-consumer models and consumption from self-regulating communities are related to different interaction climates.

Companies are expected to offer good services to the consumers, i.e., legitimate power, and also have the power to reward or punish consumers for their behavior, i.e., coercive power. In this vein a professional and good relationship between the company and the consumers is expected (Fu, Lin, & Sun, 2013). Therefore a service climate, which comprises a formal and well organized relationship, in which providers offer excellent service to make cooperative behavior easier for individuals (Gangl et al., 2015), can be expected to prevail between the providers and the consumers. Nevertheless, in some cases the companies might be perceived as malevolent and persecute consumers with sanctions when they perceive consumers as defecting, and respectively consumers hide and act uncooperatively if possible (Gangl et al., 2015). In such rare cases an antagonistic climate between the provider and the consumers might prevail. Thus, in business-to-consumer relations it can be expected that consumers mainly perceive a service climate, but some might also perceive an antagonistic climate.

Self-regulating communities on the other hand do not have measures at hand to sanction or reward consumers' behavior, therefore mutual (implicit) trust between providers and consumers and also a confidence climate exist. In such a climate providers and consumers work for the benefit of the community and feel a moral obligation to cooperate (cf., research in the context of taxpaying Alm & Torgler, 2011; Gangl et al., 2015). Therefore, interactions in such communities are mostly taking place in form of a confidence climate; neither an antagonistic climate nor a service climate is of importance.

Hypothesis 5.1

The perception of an antagonistic climate is more distinct in business-to-consumer relations than in self-regulating communities.

Hypothesis 5.2

The perception of a service climate is more distinct in business-to-consumer relations than in self-regulating communities.

Hypothesis 5.3

The perception of a confidence climate is more distinct in self-regulating communities than in business-to-consumer relations.

Thus, in the current study we contrast two forms of collaborative consumption models of car sharing, i.e., a business-to-consumer relation and a self-regulating community (Schor & Fritzmaurice, 2015). We examine differences in power, trust, cooperation, and interaction climates.

6. Method

Participants

An online questionnaire was completed by a convenience sample of 186 participants (60.2% women, $M_{\text{age}} = 27.17$ years, $SD_{\text{age}} = 10.27$). The majority of participants (89.8%) earned less than 2,000 Euro per month.

Experimental design and procedure

Participants were randomly assigned to one of two conditions, in which either (a) a car sharing company or (b) a housing community sharing a car was described in an experimental vignette. The vignettes of collaborative consumption business models (*company (community)*) were designed as follows:

“Imagine, you have decided to use a shared car of a car-sharing *company (of your housing community)* for a small fee, like other persons as well. For the *company (community)*, it is important that the car is always returned on time and in good condition. If you are often late or trash the car, it is possible that *the company even takes legal steps against you (the community even reacts negatively to you)*.

In order to facilitate the use of the car for you *the company provides a web platform where you can enter the demand of the car, whereby conditions of borrowing the car can only*

be changed with difficulties (in the garage of the house a list is posted where you can enter the demand of the car, whereby conditions of borrowing the car do not exist).

In addition, *the company (each member of the community)* ensures that the car is serviced [*regularly; only in the company condition*], so it should always work properly.

For smooth proceedings, *it is unnecessary that you meet with staff of the car-sharing company (it is necessary that you meet with the community regularly).*”

Participants should imagine, that they are using the mentioned car. After reading the scenario all participants received the following information:

„On the weekend you have taken the car for a trip. You enjoy the trip so much, that you would like to stay a day longer, but you have borrowed the car for just one day.”

Participants had to indicate intentional cooperative behavior, i.e., how likely they would return the car within the deadline (“How likely would you keep the car longer than agreed for?”; 7-point Likert Scale; Item was recoded for further analysis). Participants had to fill in a questionnaire assessing their perception of coercive power (punishment: 3 items; reward: 3 items), legitimate power (8 items), implicit trust in the provider (3 items), implicit trust in other users (3 items), reason-based trust in the provider (7 items), reason-based trust in other users (7 items), the perception of an antagonistic climate (3 items) and service climate (3 items). In addition to these self-constructed items (adapted from Hofmann et al., 2014), participants answered scales on environmental consciousness (10 items) and green consumerism (12 items; Alsmadi, 2007), risk-seeking (6 items; Colquitt, Scott, Judge, & Shaw, 2006), and trustfulness (4 items, adapted from Cattell, 2001). Responses were indicated on a 7-point Likert scale ranging from 1 („I totally disagree“) to 7 („I totally agree“). Coercive power showed poor inner consistency (Cronbach $\alpha = .51$); because of a marginally negative correlation of punishment and reward items ($r = -.13$; $p = .07$), therefore we have built two independent scales, i.e., coercive power comprising punishment items and reward power containing reward items. Cronbach α for the scales can be found in Table 1. Socio-demographics, gender, age, income, nationality and education, were assessed as well.

7. Results

Power and Trust

Testing whether the perception of power and trust differs over collaborative consumption models, a MANOVA including green consumerism, environmental consciousness, risk seeking and trustfulness as control variables revealed that respondents

differ in their answers depending on the two collaborative consumption models ($F(7, 174) = 13.35, p < .001, \eta^2_p = .35$). Coercive power is rather perceived with the company ($M = 4.77, SD = 1.39$) than with the community ($M = 2.98, SD = 1.47; F(1, 186) = 71.53, p < .001, \eta^2_p = .28$). The perception of legitimate power ($p = .23$) and reward power ($p = .22$) is equally high in both models. Means and standard deviations are displayed in Table 1.

Concerning experienced trust, the analysis reveals that reason based trust in other users is significantly higher when a collaborative consumption is organized by a community ($M = 3.92, SD = 1.26$) rather than a company ($M = 3.47, SD = 1.35; F(1, 186) = 6.19, p = .01, \eta^2_p = .03$). Similar, analysis reveals a tendency for implicit trust in other users to be higher in the community condition ($M = 3.38, SD = 1.71$) than in the company condition ($M = 3.83, SD = 1.52; F(1, 186) = 2.91, p = .09, \eta^2_p = .02$). Implicit trust ($p = .65$), as well as reason-based trust ($p = .66$) in the provider is equally high in both models (Table 1).

Table 1: Means over company and community conditions and respective Cronbach- α

N Scales	α	Company	Community
		98 M (SD)	88 M (SD)
Coercive power	.81	4.77 (1.39)	2.98 (1.47)
Reward power	.67	3.57 (1.35)	3.82 (1.29)
Legitimate power	.74	4.99 (0.88)	4.79 (1.01)
Reason-based trust - provider	.79	4.16 (1.12)	4.21 (1.34)
Implicit trust - provider	.85	3.78 (1.67)	3.95 (1.55)
Reason-based trust - users	.82	3.47 (1.35)	3.92 (1.26)
Implicit trust - users	.86	3.38 (1.71)	3.83 (1.52)
Cooperation		5.45 (1.52)	5.09 (1.67)
Antagonistic climate	.79	2.36 (1.39)	2.06 (1.08)
Service climate	.66	5.37 (1.02)	3.94 (1.28)
Confidence climate	.85	4.83 (1.45)	5.52 (1.39)
Control variables			
Environmental consciousness	.86	6.10 (0.71)	5.86 (1.02)
Green consumerism	.93	4.44 (1.30)	4.20 (1.32)
Risk seeking	.85	3.18 (1.40)	3.27 (1.24)
Trustfulness	.87	4.25 (1.31)	4.44 (1.39)

Cooperation

To test whether cooperation differs between the models, an ANOVA including green consumerism, environmental consciousness, risk seeking and trustfulness as control variables

was conducted. As expected, cooperation does not differ depending on the collaborative consumption model ($F(1, 186) = 1.45, p = .23, \eta^2_p = .01$).

Interaction climates

Concerning the research question whether the perception of climates differs according to the models, an MANOVA including green consumerism, environmental consciousness, risk seeking and trustfulness as control variables reveals that respondents differ in their answers depending on the two collaborative consumption models ($F(3, 178) = 26.48, p < .001, \eta^2_p = .31$).

Regarding the perception of a service climate, the analysis showed that, as expected, participants reported higher levels of a service climate ($F(1, 186) = 63.97, p < .001, \eta^2_p = .26$), when consumption is organized by a company ($M = 5.37, SD = 1.02$) rather than a community ($M = 3.94, SD = 1.28$). Further, as expected, the experience of a confidence climate is higher in the community condition ($M = 5.52, SD = 1.39$), than with the company ($M = 4.83, SD = 1.45; F(1, 186) = 13.71, p = .001, \eta^2_p = .07$). Additionally, in the company the antagonistic climate is higher ($M = 2.36, SD = 1.39$) than in the community ($M = 2.06, SD = 1.08, F(1, 186) = 3.95, p = .05, \eta^2_p = .02$, Table 1).

8. Discussion

More and more consumers engage in collaborative consumption actions, for economic (e.g., cost-savings for better value) or societal (e.g., increasing awareness for environmental problems) reasons. The concept of collaborative consumption includes different models, each model fraught with specific challenges, leading to different implications for consumers, companies, and the natural environment. On the one hand, companies regulate collaborative consumption commercially in business-to-consumer models. On the other hand, private individuals may share goods and services in self-regulating communities. Existing research on why consumers engage in collaborative consumption activities is rare (see Möhlmann, 2015; Tussyadiah, 2015). Therefore, the aim of the current study is to clarify the specific model's characteristics of involved power and trust and especially the resulting interaction climate for theoretical as well as practical reasons. Consumers are likely to engage in a model if its characteristics meet their personal needs and they may opt out or defect if they do not agree to the models condition.

As expected, business-to-consumer models differ from self-regulating communities according to operated power measures and customers' trust. Compared to self-regulating communities, companies organizing collaborative consumption are perceived to punish free-riders, which is in line with earlier research showing that surveillance and control mechanisms are welcomed in business-to-consumer models in collaborative consumption (c.f., research on car sharing companies, Bardhi & Eckhardt, 2012). Companies, especially service organizations, may use penalties in order to deter consumers from engaging in undesirable behaviors, for instance, by applying fees for paying late (Kim, 2007). Nevertheless, the models are similar regarding the wielding of reward power as well as legitimate power. A main explanation for the finding of the indifference of legitimate power could be that companies as well as self-regulating communities can wield legitimate power, e.g., by providing information via user-friendly websites (Umit Kucuk & Krishnamurthy, 2007) or by justly applying transparent rules (Jenny et al., 2007). Such information services were not explicitly referred to in the scenarios, but participants might have anticipated them. When communities are organizing collaborative consumption, consumers sometimes have to interact with unknown and unfamiliar peers, without the benefit of specific providers or companies, which regulate the interactions (Bin, Singh, & Sycara, 2004), which makes trust in the other users particularly important (Germann Molz, 2013). In this vein, the current study shows that implicit, as well as reason-based trust in other users is higher in self-regulated communities than when a company provides a car sharing service. In a community, where no regulating provider exists, people may exploit the good or service if they feel others are overusing the good (e.g., in household water consumption, Jorgensen, Graymore, & O'Toole, 2009). Trust in others is therefore an important determinant of cooperation in communities.

The consumer-provider relationship is perceived to be very different in both collaborative consumption models: Business-to-consumer relations are strongly characterized by a service climate between providers of collaborative consumption and its users. Generating a service climate is not only important for companies offering collaborative consumption services. This is in line with research from conventional business-to-consumer relations; high-quality service pays for all kinds of organizations, as consumers are more likely to remain customers of the company (Dietz, Pugh, & Wiley, 2004; Schneider, White, & Paul, 1998; Sureshchandar, Rajendran, & Anantharaman, 2002). Although also the perception of an antagonistic and a confidence climate differ between the models, the effect size was rather small compared to the service climate and is therefore negligible.

In communities, collaborative consumption is characterized by a confidence climate between its members. When goods are commonly shared, consumers have to rely on the other users of the good, which generates a climate of trust, and therefore a confidence climate. The perception of an antagonistic climate is slightly higher in business-to-consumer relations, but as rather low, neither the company nor the community are perceived as malevolent or untrustworthy. The results concerning the underlying customer-provider relationship suggests that the strongest distinction between the two collaborative consumption models is the prevalence of a service climate in the business-to-consumer relation. The establishment of a positive interaction climate is necessary in order to create a loyal customer base (cf. Kandampully, 1998).

Implications and future research

In the current study, we find that collaborative consumption models differ in perceptions of power, trust and interaction climates. Nevertheless, consumers behave cooperatively when consumption is regulated by a community as well as by a company. It is likely that, depending on the specific model, different psychological processes are underlying consumers' cooperation. The present study does not address the correlative relationships of the processes, but future research certainly needs to investigate this aspect. Coercive power seems to foster cooperation in business-to-consumer models, whereas communities ensure cooperation through mutual trust. Communities therefore need to consider trust building measures, for instance through increasing community identification (Van Vugt, 2001) or communication (Dyer & Chu, 2000).

Over the past decades, the concept of collaborative consumption has progressed into a popular form of consumption, covering several business areas. The current study focuses on car sharing and therefore shared mobility, one segment of collaborative consumption. Based on these insights, future research should investigate additional collaborative consumption areas in order to verify current results, such as the sharing of luxury goods for a fee (e.g., bag borrow or steal) or lending a room for free (e.g., couch surfing), especially the development of the World Wide Web. Web 2.0 has allowed for interaction via websites between individuals from all over the world, and with that has fostered sharing behavior, which originally was limited to a small group of people living in close proximity, between persons all around the globe (Belk, 2014; for research on virtual community models see Leimeister & Krcmar, 2004). Digitalization comprises different challenges for service providers. In collaborative

consumption organized via the internet different conditions may prevail, resulting in different challenges for consumers. For instance, research has shown that reputation-based techniques (Ooi, Liau, & Tan, 2003) are important on internet business platforms (Corbitt, Thanasankit, & Yi, 2003; Greiner & Wang, 2010; Jones & Leonard, 2014; Sutanonpaiboon & Abuhamdieh, 2008) in order to establish trust. Further research should investigate possible differences in collaborative consumption actions, depending on whether they are organized offline or through the internet.

Based on the results, companies offering collaborative use of goods are advised to have an excellently functioning system of regulations in stall to protect consumers from users exploiting the system. In the car sharing business this would mean to guard consumers from users who, e.g., bring back the borrowed car late and/or messy, or who reserve the car but then do not actually pick it up. Additionally, companies should make sure that they provide exceptionally good services. This can comprise extras for no or only small fees, e.g., a navigation system, the decoration of cars for special occasions, or internet platforms and apps to accelerate and facilitate the reservation process. To attract consumers who find communities collaboratively using goods more appealing, companies should, e.g., organize events where users of the goods can meet. On the one hand, consumers get to know the companies themselves, and over regular events implicit trust in the companies emerges. The companies benefit from this implicit trust, because a confidence climate between companies and consumers develops, and consumers feel an obligation to cooperate which diminish costly sanction systems for defection. On the other hand, events would give consumers the opportunity to get to know other users and also establish implicit trust in them. This again benefits the companies, they can reduce costly sanction systems for defection, because consumers are aware that other users also feel an obligation to cooperate.

Besides recommendations for companies, results also allow for advice for communities organizing consumption; in communities it is essential to establish mutual (implicit) trust between the users of the collaborative goods. Thus, regular meetings, face-to-face or virtually, are essential. In cases where such meetings are impossible other indicators of users' trustworthiness are vital, e.g., reputation ratings and verbal evaluations by other users similar to the respective consumer who needs to know about trustworthiness. If communities want to attract consumers, who find companies offering collaborative goods more appealing, communities need to introduce regulations that protect these consumers from free-riding users. Such sanctions can include, e.g., extra work for the community, reduced access to the collaborative goods, or the exclusion from the community.

The results of the current study hold valuable implications not only for research but also for companies and communities organizing collaborative consumption. Findings indicate that collaborative consumption models differ according to the application of coercive power and consumers' trust in other users, and especially the perceived interaction climate. Consumers will decide to engage in a model which meet their needs and expectations. Different groups of consumers may be addressed more adequately when providers of collaborative consumption services are aware of consumers' perception of the models identified in the current study.

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Publication 8

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ABSTRACT

One new consumption paradigm which challenges the market is collaborative consumption, whereby people are provided with access to a good rather than owning it. Literature discusses whether regulation is one demand for collaborative consumption businesses. Using a within-subject design, we investigated how consumers react towards governance in a collaborative consumption community. After reading vignettes, participants indicated how likely they would cooperate and whether they support governance or not – giving reasons for their evaluation. Accordingly, the majority of participants support governance in the context of an open workshop and governance increases cooperation. Supporters of governance differ from non-supporters according to their trust in other users. Qualitative data analysis shows that supporters argue that humans are egoistic, whereas non-supporters are concerned about negative consequences, asking for alternative incentives. The current study allows valuable recommendation, as more and more sharing networks are created, facing the problem of whether to regulate access or not.

Keywords: collaborative consumption, sharing economy, governance, trust, community

1. INTRODUCTION

Sustainable consumption is a major issue in the marketplace in the beginning of the 21st century (e.g., Banbury, Stinerock, & Subrahmanyam, 2012; Phipps et al., 2013; Tanner & Wölfling Kast, 2003; Vermeir & Verbeke, 2006), as over-consumption and exploitation of resources are made responsible for major environmental problems (Piscicelli, Cooper, & Fisher, in press). Due to a growing concern on air pollution, climate change or resource scarcity, combined with an increasing use of network technologies, more sustainable ways of consuming have received growing attention (McDonald, Oates, Young, & Hwang, 2006; Piscicelli et al., in press). One of these new forms is collaborative consumption, whereby ownership is replaced by access (Belk, 2014; Botsman & Rogers, 2010). Instead of buying goods and owning them, consumers gain temporarily access to goods they need (Bardhi & Eckhardt, 2012). Engaging in collaborative consumption is increasing in popularity (Belk, 2014), stimulating new business models. One million car sharing members in North America in the beginning of 2013 (Birdsall, 2014), and many millions of room nights sold by Airbnb (Guttentag, 2013) show that collaborative consumption is on the rise. Although collaborative consumption is a competitive business model and thereby challenging conventional providers (Möhlmann, 2015), little is known about possible demands consumers face in collaborative consumption business models.

Collaborative consumption is a form of consumption whereat people coordinate the acquisition of a resource for a (monetary or non-monetary) compensation (Belk, 2014). People are provided with access to a good, mostly without the higher costs and responsibilities usually accompanied by ownership. Collaborative consumption covers a range of transactions in almost all business areas, including entertainment (e.g., file sharing), food (e.g., communal gardens) and traffic (e.g., car sharing). For instance, the term “communal garden” covers several models of garden organization, like neighborhood gardens, in which people informally or formally farm on land in their neighborhood (Alaimo, Packnett, Miles, & Kruger, 2008). Similarly, consumers can share goods in public book boxes or open workshops, where people access tools for work around their house.

Various terms are used in the literature referring to collaborative consumption or similar concepts, such as “sharing economy” (Heinrichs, 2013), is often used synonymously for “collaborative consumption”, “sharing”, “access-based consumption” or “anti-consumption”. Engaging in collaborative consumption actions is, contrary to sharing, not necessarily altruistic, but is rather underlined by economic exchange (Bardhi & Eckhardt, 2012). The concept of collaborative consumption is also related to “access-based

consumption” (Bardhi & Eckhardt, 2012), which contains elements of both collaborative consumption and sharing (Belk, 2014), and anti-consumption (Albinsson & Perera, 2012), as the sharing of resources, for instance, in toy lending libraries (Ozanne & Ballantine, 2010; Ozanne & Ozanne, 2011), reduces the consumption of new goods (c.f. "reduced levels of consumption", Shaw & Newholm, 2002).

New business models based on the concept of collaborative consumption comprises new challenges for the market place. In contrast to conventional businesses, collaborative consumption businesses are accused of not offering a standardized level of service and price (Cusumano, 2015) and of lacking safeguards for customers (Rauch & Schleicher, 2015). Regulation has become a highly charged policy topic, leading to the question whether it protects consumers or restrains companies from entering collaborative consumption (Koopman, Mitchell, & Thierer, 2014; Rauch & Schleicher, 2015). In order to answer whether and how collaborative consumption should be regulated, it needs to be considered that the concept of collaborative consumption comprises various business models, differing in several features.

Collaborative consumption can be organized by companies (business-to-consumer; e.g., car sharing company, Shaheen & Cohen, 2008), other consumers (e.g., peer-to-peer carsharing, Ballus-Armet, Shaheen, Clonts, & Weinzimmer, 2014), or communities (e.g., community sharing of solar energy system, Jenny, Fuentes, & Mosler, 2007). Most of the research has been devoted to business-to-consumer models. For instance, Bardhi and Eckhardt (2012) conducted interviews with customers from a car sharing company, showing additionally that regulation and governance are evaluated positively by consumers, maybe due to a lack of trust in the other users. As car sharing users themselves act opportunistically (e.g. not giving a GPS receiver left in the car to the lost and found), they expect others to do the same (Bardhi & Eckhardt, 2012). When it comes to a business-to-consumer model, the company can take the responsibility of managing distrust between community members via a governance system.

However, the term “collaborative consumption” covers also consumption from self-regulating communities, like communal gardens (Birky & Strom, 2013) or toy libraries (Ozanne & Ballantine, 2010). Research on communal gardens (e.g. Armstrong, 2000; Ferris, Norman, & Sempik, 2001; Glover, 2004; Saldivar-Tanaka & Krasny, 2004) has focused on vegetable production (Algert, Baameur, & Renvall, 2014), food diversity (Guitart, Pickering, & Byrne, 2014) or potential conflicts between different actors in a communal garden (Schmelzkopf, 2002). People share resources by cultivating a garden, which may be public or

owned by a community, and harvest the fruits. Bardhi and Eckhardt (2012) suggest that it may be a more social type of collaborative consumption as consumers seem to feel responsible for the community and its members. As a result, trust between the community members plays a significant role. If people lack trust in other users in such a situation, they may call for governance and regulation, like customers of a car sharing company (Bardhi & Eckhardt, 2012). Especially the heterogeneity of member's interests and goals can result in management problems (e.g. in the context of online communities of consumption, see Sibai, de Valck, Farrell, & Rudd, 2015). As more and more networks are created to share resources, the question arises of whether to regulate and control access or not, and whether consumers would support its regimentation. In order to prevent negative consequences of governance systems, it is necessary to gain knowledge of consumers' attitudes towards control and sanctions in collaborative consumption.

The aim of the current study is to explore the challenge of governance in a collaborative consumption community. It is investigated how consumers react towards governance and control. To address this aim, the study extends existing research in several ways. First, it is examined whether governance increases cooperation when consumption is organized by a community. Second, it is investigated if and why consumers support a governance system in the context of collaborative consumption or oppose it. Third, it is examined whether supporters and non-supporters of a governance system differ in their distrust in other group members. To address these questions, an experiment, using a within-subject design, was conducted, completed by a qualitative approach.

1.1. Theoretical Background

The situation in an open workshop, and in any other collaborative consumption situation, represents a social dilemma. When people use resources obtained by a community, for instance tools, books, or fruits grown in the garden, they are individually better off when they make use of it without contributing in return. They can benefit by acting selfishly and in this vein, "each farmer does best by taking as much irrigation water as possible, and each fisher benefits from catching as many fish as possible" (Kollock, 1998, p. 184). If most people try to maximize their own utility and act selfishly, the outcome can become a disaster for the whole community. A way to encourage cooperation is to monitor and sanction defection (Kollock, 1998). Governance systems sanctioning noncooperation are usually implemented by authorities, as for instance national governments, when it comes to hinder music piracy

(Coyle, Gould, Gupta, & Gupta, 2009; Yang, Wang, & Mourali, 2015), or companies, when it comes to consumption (Bardhi & Eckhardt, 2012).

Interviews show that customers of a car sharing company welcome monitoring control mechanism because they think of it as an opportunity to induce equitable usage among the users (Bardhi & Eckhardt, 2012). However, when a group of people regulates collaborative consumption, no clear monitoring authority exists. There are often less explicit rules or legal regulations than in a business-to-consumer model. It is therefore of interest, whether consumers support a governance system when collaborative consumption is organized by a community and whether the introduction of a governance system increases cooperation of supporters as well as non-supporters.

Although sanctions are discussed as a possible solution to ensure cooperation, research on social dilemmas has also shown the disadvantages of sanctions as they can undermine cooperation when trust in other group members was initially high (Mulder, van Dijk, De Cremer, & Wilke, 2006). In this vein, people are willing to contribute to a sanction system if they share the goal of cooperation but do not trust other group members to voluntarily cooperate (Yamagishi, 1986). The introduction of a sanction system can make people further aware that other group members act in their own self-interest and exploit the resources of the community (Mulder et al., 2006), and as a result undermines trust (Fu, Lin, & Sun, 2013). Social dilemma research therefore suggests that trust in other community members is particularly important for understanding attitudes towards sanctions and governance in a community.

Trust plays an important role in consumer behavior, as economic transactions involve risk and trust in another party is making oneself vulnerable towards the actions of the other party (Mayer, Davis, & Schoorman, 1995). Several studies in marketing have examined the role of trust in the buyer-seller relationship (e.g. Ganesan & Hess, 1997), in peer-to-peer electronic communities (Li & Ling, 2004), system trust in business-to-consumer transactions (Pennington, Wilcox, & Grover, 2003), or contracts as a way to harm or foster trust in business relationships (Praxmarer-Carus, 2014). First results in collaborative consumption show that in both business-to-consumer and consumer-to-consumer models trust is essential for consumers' satisfaction (Möhlmann, 2015). In a business-to-consumer model, consumers have to rely on the promises given by companies, but risk for both parties can be reduced by contracts and legal regulation. In the context of collaborative consumption organized by a community, trust in other's willingness to cooperate may be even more important (Belk, 2014), as a lack of legal requirements results in more uncertainty for the consumer. If people

lack trust in other users in such a situation, they may call for governance and regulation in order to handle risk in an economic exchange. It is therefore assumed that in the setting of collaborative consumption, people, who trust others to cooperate, do not support the introduction of a governance system, whereas people who distrust others favor control mechanisms.

In order to address the needs of consumers in collaborative consumption business models, it is relevant to know why consumers support or oppose a governance system and whether cooperative or non-cooperative members differ concerning their considerations. A regulation system may be perceived as necessary, as community members might otherwise take advantage of others. People, who already act honestly, may claim the implementation of a governance system as a safeguard against non-cooperators (cf. research on tax compliance, Gangl, Hofmann, & Kirchler, 2015). Further, consumers might think that the system will break down without enforcement mechanisms and therefore see governance as necessary device (Bardhi & Eckhardt, 2012). Additionally, the existence of control mechanisms may remind consumers of the well-being of the larger group rather than just their own interest. However, control mechanisms can be perceived as a limitation of choice autonomy and freedom (Falk & Kosfeld, 2006). The implementation of a government system can therefore have several negative outcomes, such as negative emotions (Joffily, Masclet, Noussair, & Villeval, 2014), and reactance (Kirchler, 2007). Besides investigating the consequences of governance, the current article also addresses considerations why people do or do not support the implementation of a governance system and whether the reasons of cooperative community members differ from uncooperative members.

2. METHOD

2.1. *Participants*

An online questionnaire was completed by a convenience sample of 355 consumers (35.8% men, $M_{\text{age}} = 26.61$ years, $SD_{\text{age}} = 8.41$, $\text{Range}_{\text{age}} = 18-60$). The majority of participants (63.7%) earned less than 1,000 Euro per month.

2.2. *Materials and procedure*

Using a within-subject design, participants were first introduced to a collaborative consumption situation (open workshop) without audits and sanctions (“no governance”). Participants imagined living in a city in which a workshop with a tool library at free disposal exists for all citizens. This open workshop should enable citizens to lend tools for work

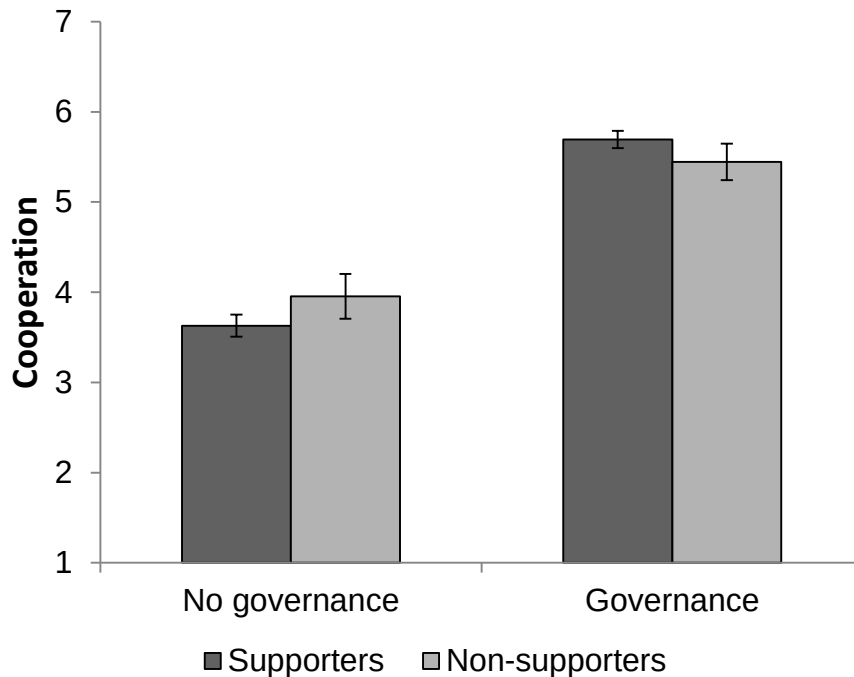
around their house or flat at no costs. All tools should be returned after three days. The access to the open workshop and the use of the tools is not subject to any controls. In the second vignette (“governance”), participants were informed that due to a reorganization of the open workshop a governance system had been established to better monitor the access to the workshop. Further, the community now has the opportunity to punish inappropriate use or delayed return of the tools. After each of the two vignettes, participants had to indicate how likely they would cooperate and return the tools within three days (“*How likely would you keep the tools longer than three days?*”; 7-point Likert Scale; item was recoded).

After the second vignette, participants had to indicate whether they support the implementation of a governance system or not (“*The implementation of a governance system is a good idea / is a bad idea*”). Based on the question concerning their support, participants were assigned to two groups: Supporters versus non-supporters. Further participants had to state reasons for their evaluation (“*The implementation of a governance system is a good idea/a bad idea, because...*”; open question). Next, levels of distrust in other people’s cooperation is assessed using five items adapted from van Lange, van Vugt, Meertens, and Ruiters (1998). For each item (e.g., *If a community shares resources, you have to be careful, otherwise people will exploit you*), participants indicated the level of agreement, 1 (*totally disagree*) to 7 (*totally agree*). Cronbach alpha for the distrust-scale was .76.

3. RESULTS

A first result revealed that the majority of the participants, 81.7% (290 supporters; 65 non-supporters), supported the introduction of a governance system. To test whether the implementation of a governance system increases cooperation and whether the effect differs for supporters and non-supporters, a repeated measure ANOVA was conducted including support of the sanction system (supporters versus non-supporters) as independent variable. The analysis revealed a significant main effect of condition (no governance system vs. governance system), $F(1, 351) = 137.75, p < .001, \eta^2_p = .28$. As expected, cooperation increased when control mechanism and sanctions were applied ($M_{no\ governance} = 3.69, SD = 2.06$; $M_{governance} = 5.65, SD = 1.64$; Figure 1). Further, analysis revealed only a tendency for an interaction effect between the condition and support, $F(1, 351) = 3.51, p = .06, \eta^2_p = .01$ and no significant main effect of support on cooperation, $F(1, 351) = 0.41, p = .84, \eta^2_p = .00$.

Figure 1: Means and standard errors of cooperation for supporters and non-supporters in the first ('no governance') and in the second ('governance') vignette



To test whether supporters of a governance system differ from non-supporters according to their distrust in other people, an ANOVA was conducted. As expected, the analysis revealed that supporters ($M = 4.67$, $SD = 1.12$) distrust other people more than non-supporters ($M = 3.53$, $SD = 1.21$; $F(1, 353) = 53.27$, $p < .001$, $\eta^2_p = .13$).

3.1.Reasons for governance systems

To examine whether the reasons for supporting a governance system differ between cooperative community members from uncooperative members, answers to the open question (*“The implementation of a governance system is a good idea/a bad idea, because...”*) were analyzed. Participants indicated 616 reasons why they support or do not support the introduction of a governance system. Participants who supported the governance system stated on average 1.98 reasons; non-supporters stated on average 1.67 reasons. For further analyses, two independent raters (1 female, 1 male) were instructed to assign all reasons to 38 categories of a predefined categorization scheme (see Appendix). An interrater reliability analysis using the Kappa statistic was performed to determine consistency among raters ($Kappa = 0.81$; $p < .001$), which indicated a strong agreement (Landis & Koch, 1977). In case

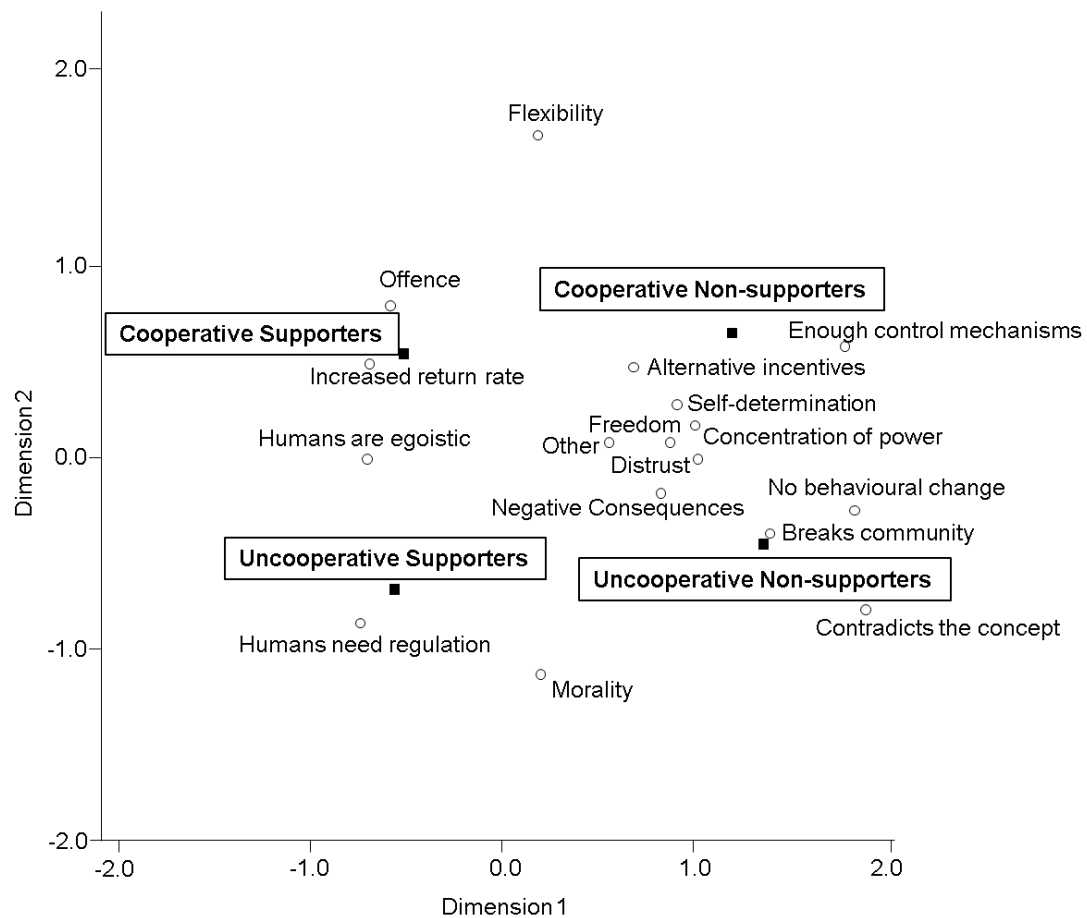
of disagreement, the raters afterwards discussed each statement until an agreement was reached.

Results show that supporters of a government system most frequently reported that humans are egoistic (15%), humans need regulation (9.4%) and that a governance system leads to an increased return rate (8%). On the other hand, non-supporters most frequently stated concerns about negative consequences of governance (13.2%), concerns about losing self-determination (10.9%) and stress the need of alternative incentives (8.5%).

To answer the question whether the reasons of cooperative community members for supporting the sanction system differ from uncooperative members, a correspondence analysis was applied, differentiating between support of the governance system (support vs. non-support) and whether participants had indicated cooperative vs. uncooperative behavior in the first vignette (median split). The correspondence analysis is a method that yields a graphical representation of the association between columns and rows of a contingency table. A correspondence analysis depicts the similarity of assignment profiles; therefore concepts that are related to one another are closely related in the figure. The frequencies of all categories, separated by support of the governance system (support vs. non-support) and cooperative behavior (cooperative vs. uncooperative) were analyzed by means of a correspondence analysis (Blasius, 2001). Applying the correspondence analysis to all 38 categories resulted in a two-dimensional configuration. A cross table of the standardized residuals shows that the amount of the standardized residuals of 17 categories was greater than 1.96. Those 17 categories were included in the final correspondence analysis, which resulted in a two-dimensional configuration explaining 88 per cent of the variance (Figure 2).

The first dimension (explaining 71 per cent of the variance) pointed at different views of motivation for cooperative behavior. Configured along the negative hemisphere of the first dimension were categories such as ‘humans are egoistic’, ‘humans need regulation’ as well as ‘increased return rate’, indicating that people need extrinsic incentives to be cooperative. In contrast, the categories ‘enough control mechanisms’ and ‘contradicts the concept’ were found on the positive hemisphere of the first dimension.

Figure 2: Graphical portrayal of correspondence analysis results



Along the opposite direction of the second dimension (explaining 17 per cent of the variance) categories such as ‘morality’ and ‘flexibility’ were configured, indicating that the second dimension differentiates between fixed moral rules and flexible arrangements. Cooperative supporters are located in the positive hemisphere of the second dimension, characterized by security concerns, such as ‘increase return rate’ and ‘humans are egoistic’. Uncooperative supporters, in the negative hemisphere of the second dimension, are located near the category ‘humans need regulation’, which indicates that people need to be motivated by audits and sanctions in order to be cooperative. On the one hand, people, who do not support the government system, and already react cooperative without governance, are located near the categories ‘alternative incentives’ and ‘enough control mechanism’. On the other hand, uncooperative people, who do not support the governance system, are closely related to the concepts ‘breaks community’, ‘no behavioral change’ and ‘negative consequences’.

4. DISCUSSION

Due to the growing popularity of collaborative consumption, it is relevant to understand what kind of challenges collaborative consumption provides for the market. Extant literature suggests that collaborative consumption lacks regulation in contrast to conventional businesses (Koopman et al., 2014; Rauch & Schleicher, 2015). The aim of the current study is to contribute to collaborative consumption literature by examining the role of governance in a community of consumers via a quantitative as well as a qualitative approach.

In the current study, a great majority of consumers support the introduction of a governance system in an open workshop. Analyzing the reasons for or against governance systems the current study shows that consumers support governance, because they think of humans as egoistic and in need of regulation. Supporters of a governance system underline that governance is in their opinion needed in order to increase the return rate of commonly used goods in collaborative consumption. This finding indicates that a majority of people would engage in collaborative consumption, if the access and use of the goods are controlled. Nevertheless, non-supporters of a governance system are most concerned about negative consequences of governance systems. Consumers fear a loss of self-determination and a break in the relationship of the community members, resulting in less cooperation.

In the current study, governance positively impacts cooperation, which is in line with earlier research that stresses the effectiveness of control and sanctions in a social dilemma (Milinski & Rockenbach, 2012; Tenbrunsel & Messick, 1999). The current analysis shows a tendency for an interaction effect, indicating that the implementation of a governance system may decrease cooperation when people do not support it. Though the effect size of the interaction effect is rather small, it is relevant for further research to take negative consequences of sanctions on collaborative consumption in consideration and examine possible double-edged effects. As the implementation of a sanction system prompts people to think of a decision in business terms rather than in ethical terms, it may have negative consequences on cooperation (Tenbrunsel & Messick, 1999). Benefits of a governance system may therefore only emerge when cooperation would be highly unlikely without sanctions (Jiang, Perc, & Szolnoki, 2013).

Although the current study sheds light on regulation as a challenge for the market in collaborative consumption, there are some limitations, which have to be considered in further research. In the study, the decisions to cooperate or not was solely based on the description of the open workshop. This is in contrast to a real world situation of collaborative consumption which is often characterized as a social and less anonymous situation (Bardhi & Eckhardt,

2012). It is highly likely that people engaging in collaborative consumption already know other members of the group, as for example in a communal garden in the neighborhood. If community members know each other well and share partnering experiences, which is more likely in small groups, greater mutual trust enhances cooperation (Sanchez de Pablo Gonzalez del Campo, Pena Garcia Pardo, & Hernandez Perlines, 2014; Yamagishi & Sato, 1986), making control mechanisms less necessary. The need of regulation is meant to be a problem for large groups, where it is nearly impossible to affect others' outcomes. Nevertheless, due to its increasing popularity and digitalization, collaborative consumption is not a small group phenomenon of close acquaintance anymore. As group sizes increase, communication and coordination of action gets harder. Such large-scale dilemmas can be solved by rewarding cooperators or punishing defectors (Kollock, 1998).

The current study is one of the first to investigate collaborative consumption regulated by a community, demonstrating that consumers' request for governance is a relevant outcome for the market. Although a great majority of people support the implementation of sanctions in the current study, the need of both groups, supporters as well as non-supporters of a governance system, has to be considered in designing successful collaborative consumption business models. Negative consequences of governance may be prevented by addressing the need of consumers via a differentiated approach whereby the community recognizes those group members worthy of prosecution and those deserving of encouragement and support (Braithwaite, 2001). In order to satisfy both groups, supporters as well as non-supporters of a governance system, the way of how audits and sanctions are exercised may be a key determinant of whether a sanction system will be accepted by the community. If a sanction system is perceived as fair, cooperation increases (Verboon & van Dijke, 2011), whereas sanctions can destroy altruistic cooperation almost completely when they are not applied in a fair way (Fehr & Rockenbach, 2003). It is therefore relevant, that monitoring and sanctions are based on acceptance of the community members. Besides the execution of sanctions, future research should investigate alternative forms of governance, such as social control to assure member's continued engagement (Sibai et al., 2015).

The findings are particularly important as in the context of collaborative consumption more and more networks are created via the internet to share resources. Such big networks face the question of whether to regulate and control access or not, especially when community members differ according to their motives for engaging in collaborative consumption. If the motives of the consumers do not comply with the conditions of a collaborative consumption setting, consumers may decide to opt out and buy goods rather than temporarily own them.

Current results indicate that a majority of people would engage in collaborative consumption, if the access and use of the goods are controlled. This may be particularly the case if consumers choose collaborative consumption for economic reasons. If people's decision to engage in collaborative consumption is based on social considerations, the implementation of a governance system may lead to reactance and less cooperative behavior or consumers will opt out. Further research should therefore concentrate on the motives for engaging in collaborative consumption as some consumer may consider it as a form of boycott (Neilson, 2010) or try to reject consumption in order to live a sustainable life (Black & Cherrier, 2010; McDonald et al., 2006) rather than because of economic considerations (Belk, 2014).

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Reprint of additional articles

Publication 1

Muehlbacher, S., **Hartl, B.**, & Kirchler, E. (in press). Mental accounting and tax compliance. Experimental evidence for the effect of mental segregation of tax due and revenue on compliance. *Public Finance Review*.

Abstract

Taxes are a burdensome and tedious issue for self-employed who have just started their business. The present research suggests mental accounting (Thaler 1999) as a measure for self-employed to keep track of their financial activities. Based on prospect theory (Kahneman and Tversky 1979), we argue that the mental segregation of taxes due from net income affects a taxpayer's reference point in the compliance decision, and results in higher tax compliance. Findings from a laboratory experiment confirm this prediction. Further, we show that relevance of mental tax accounting is higher when the tax due is not specified externally as it is the case in pay slips provided to employees. The individual tendency towards mental segregation of tax due and net income is positively related to the sex and age of respondents, their attitudes towards taxpaying, and their experiences gathered in the course of the experiment.

Keywords: mental accounting, tax compliance, tax evasion, voluntary compliance, self-employed.

Introduction

“At the beginning [when we started our business], we simply spent all money. As soon as we got something, we thought: ‘cool, let’s go on holiday. But as naïve as we were, you shouldn’t start a business...” (Statement from interviews with self-employed taxpayers reported in Muehlbacher & Kirchler 2013, 419)

The self-employed are a special group of taxpayers. They are harder to tax than employees whose income is reported by a third party, and consequently - opportunity makes the thief - they are more prone to tax evasion than others (Kirchler 2007; Kleven et al. 2011; Slemrod 2007). Particularly the first years after starting a business finding a way for reducing the tax burden seems to be tempting. Unexperienced entrepreneurs feel restricted in their managerial decisions and tend to set more actions to reduce or avoid taxes (Kirchler 1999). Taxes are a tedious issue while trying to succeed, a struggle that often ends after a short time. In Austria, for instance, after three years 20 percent of newly founded businesses are dismissed, after five years 32 percent; the average dropout rate after five years for the whole European Union is 50 percent (Wirtschaftskammer Österreich 2014). One of the reasons for early bankruptcy seems to lie in planning and administering the money flow. Entrepreneurs often never have learned how to keep accurate books and how to deal with legal issues. In an information brochure for business start-ups, the Austrian Economic Chambers (2014) warn young entrepreneurs about a major pitfall in handling their tax due: In the first year after starting a business, tax pre-payments are typically based on self-reported estimations of the expected profit for the current period. Reporting lower expected gains than actually aspired to the tax office would nicely reduce financial constraints during the start-up phase and postpone part of the real tax due to next year. However, if real revenue exceeds the estimation, the subsequent year missing taxes from last year and tax pre-payments for the current period are due. The resulting tax bill often becomes a serious problem for small business start-ups, and in the information brochure for business founders it is explicitly recommended that they put at least 30 percent of revenues on an extra bank account to avoid unpleasant surprise (Wirtschaftskammer Österreich 2014). However, keeping track of one’s finances and putting aside enough money in time requires a high degree of self-control.

The research presented here studies mental accounting (Thaler 1999) as a measure for self-employed taxpayers to keep control over their finances. We show that individual differences in how taxes are mentally processed explain tax compliance, and that mental

accounting strategies are learned by experience with paying taxes. To the best of our knowledge, we present the first experimental evidence for the effect of mental accounting on tax compliance.

Mental Accounting and Individual Differences

Mental accounting is defined as “[...] the set of cognitive operations used by individuals and households to organize, evaluate, and keep track of financial activities” (Thaler 1999, 183). One of the theory’s core assumptions is that income and expenses are grouped into different mental accounts. Committing oneself to specific budgets for “Food”, “Rent”, or “Entertainment” should help keep control over expenses. Indeed – and by contrast to the notion of fungibility in traditional economics - it seems to matter in which category expenses occur and how money is labeled. Participants in a study by Heath and Soll (1996) indicated, for instance, that they are less willing to buy a theater ticket after having bought a sports ticket (same category) for \$50 in the same week, than after having spent the same amount for an inoculation against the flu (different category). Fogel (2009) showed that income from a “serious” source (e.g., a health insurance refund) is likely to be spent for “serious” expenses such as paying bills and saving, whereas money from a “frivolous” source (e.g., a birthday gift) is used for buying clothes and spending on oneself. Although keeping mental accounts seems to produce irrational spending behavior in some situations, its actual purpose is to keep control of expenses (Thaler 1999). Mental accounting should make it easier not to spend too much money on things one likes and to save enough money for one’s less attractive but necessary expenses.

Most empirical studies on mental accounting have varied the situation in which a decision should be taken. For instance, in the classical theater-ticket study by Kahneman and Tversky (1984), participants in one experimental treatment indicated whether they would buy another ticket after having noticed the loss of a ticket bought in advance (same category). In another treatment participants were more willing to buy a ticket after learning they had just noticed the loss of a dollar bill of similar value as the theater ticket (no specific category). However, the extent to which individuals operate mental accounting as a way to keep track of financial activities seems to vary (Antonides, de Groot, and van Raaij 2011; Muehlbacher and Kirchler 2013; Muehlbacher and Kirchler manuscript in preparation). A psychological measure for the individual disposition to engage in mental accounting (Muehlbacher and Kirchler manuscript in preparation) moderates the effect of Kahneman and Tversky’s (1984) theater ticket scenario. Only individuals with high values on this mental accounting scale seem to

differentiate between the loss of the ticket and the loss of a dollar bill. Moreover, the measure moderates the effect of income source on spending category, as described in Fogel (2009). Although research on individual differences in mental accounting is scarce, it seems that the extent to which mental accounting strategies are pursued varies from person to person.

Mental Accounting and Taxes

In previous research the concept of mental accounting has been frequently applied to explain behavior related to various aspects of taxation. Feldman (2010) showed that withholding smaller amounts for income tax decreases the likelihood that a tax refund is invested in a tax-preferred retirement account. Drawing on mental accounting theory, she argued that the resulting higher monthly income is perceived as a budget increase in the mental consumption account, and money from this account is myopically spent by the households. In a related study applying hypothetical choice-scenarios, Chambers and Spencer (2008) found that monthly tax refunds would be typically spent for monthly expenditures, whereas a yearly refund received as a lump sum is more likely to be saved or used to pay back debts. Jackson et al. (2005) analyzed almost 70 000 tax returns, and reported that taxpayers receiving a tax refund were charged higher fees by their tax preparers than taxpayers owing additional payments of taxes. They point out that from the perspective of mental accounting theory, expecting a tax refund could increase the willingness to accept higher fees. Because costs for the tax preparer and the expected tax refund occur in the same mental account, the bills can be mentally deducted from the expected refund. Hence, overpayments of taxes in professionally prepared tax returns likely occur with intent.

Research on the role of mental accounting for tax compliance is relatively scarce. Ashby and Webley (2008a, 2008b) conducted interviews and focus groups with hairdressers, beauticians, and taxi drivers about their compliance with reporting tips as income. Most participants confessed low compliance, in part because they perceived tips as a gift from their customers rather than mentally categorizing this money as taxable income. Adams and Webley (2001) reported an interesting statement from an interview study with small business owners: “[Value added tax] is not a cost to the business, we are just looking after the money for the government. There is no point worrying about paying. It is their money” (Adams and Webley 2001, 208-209). Whereas other participants in the interviews perceived value added taxes as an imposition reducing the profit, this interviewee seemed to mentally segregate the tax due from turnover and expresses voluntary compliance. However, mental accounting of value added taxes may differ from the administration of other taxes such as the income tax.

Whereas the former is a flat tax paid by customers in course of the transaction, income tax rates are normally progressive and the true liability is not known until the end of the year. Mental processing of tax liabilities in general – including value added tax and income tax - was more systematically studied in Muehlbacher and Kirchler (2013). In interviews with self-employed taxpayers they found similar statements as in Adams and Webley's (2001) study indicating some form of mental tax accounting. The majority of participants expressed mental segregation of the tax due from the revenue, for instance by stating "From the past years I know approximately how much money I have to put aside for taxes" (Muehlbacher and Kirchler 2013, 419). Others seemed to keep no separate mental account for taxes, as indicated in statements such as "Taxes do not really cross my mind when I see the revenue" (Muehlbacher and Kirchler 2013, 419). Based on the interviews a psychological scale measuring the individual tendency towards mental integration or segregation of the tax due was developed for a follow-up study. Mental segregation was found to be positively related to age, attitudes towards taxes, and self-reports about tax compliance. Keeping a separate mental account for the tax due seems to increase compliance.

An explanation for the positive relation of tax compliance and mentally segregated accounts is provided by prospect theory (Kahneman and Tversky 1979). In prospect theory it is assumed that decision outcomes are evaluated in relation to a reference point that divides the value function in a loss and a gain domain. The reference point may be the current asset position, an expectation, or an external stimulus provided by the decision frame. Hence, which outcome is perceived as a loss is a highly subjective matter. In general, because prospect theory's value function is steeper for losses than for gains and because it has diminishing sensitivity in both domains, the prospect of a gain leads to risk-averse choices, whereas the threat of a loss increases the willingness to take risks. Prospect theory has often been applied in tax research (e.g., Dhimi and al-Nowaihi 2007; Schepanski and Kelsey 1990; Yaniv 1999), for instance to explain the withholding phenomenon. Underwithheld taxpayers facing the loss of additional payments are more prone to evasion than overwithheld taxpayers expecting the subjective gain of a tax refund. The difference can be interpreted as the effect of employing current rather than expected asset position as reference point in the compliance decision (Schepanski and Shearer 1995). Another study on whether current or expected asset position better represents taxpayers' reference point concludes that both asset positions seem to be commonly used as reference, and which one is applied depends on the decision situation and on individual expectations (Kirchler and Maciejovsky 2001). A situation where expectations serve as a reference point is when income was earned by hard work. With every

investment that a job demands, expectations for satisfactory monetary compensation increase, and these aspirations may serve as reference in the compliance decision (Kirchler et al. 2009).

Mental accounting could play a key role in determining which reference point is employed in the tax compliance decision: Expecting the tax due and keeping a separate mental account for taxes (i.e., to mentally segregate taxes from the revenue) would mean that expected net income serves as a reference point. From this perspective evading taxes would yield an additional gain in net income, but also a painful loss in case of an audit and a fine. By contrast, without such a mental tax account (i.e., to mentally integrate taxes and revenue) gross income would serve as reference point, and paying taxes would be perceived as a loss. By evading taxes the loss could be repaired, and with gross income as reference point the risk of paying a fine in case of an audit seems less threatening. Hence, the high compliance observed in Muehlbacher and Kirchler (2013) among the self-employed who mentally segregated the tax due from the revenue can be interpreted as the effect of employing expected net income as a reference point in the decision whether to evade taxes.

Research Questions and Hypotheses

The present research is the first experimental approach to study the role of different mental accounting strategies for tax compliance of self-employed taxpayers. On the basis of prior research it is assumed that the self-employed differ with regard to their mental processing of taxes. Either the tax due is mentally segregated from the revenue and expected net income serves as reference point in the compliance decision, or the tax due and net income are integrated to the same mental account, making gross income the reference point. Based on prospect theory (Kahneman and Tversky 1979) and on prior research (Muehlbacher and Kirchler 2013), it is hypothesized that:

H1a. Tax compliance is higher in case of mental segregation of the tax due than in case of mental integration.

However, it is assumed that the relevance of mental accounting for compliance depends on the decision situation. For instance, by contrast to self-employed taxpayers, employees typically receive pay slips from their employers with details regarding the gross income, tax payments, and resulting net income. Thus for self-employed taxpayers who have to do these calculations on their own, stringent accounting is of higher relevance than for other taxpayers. Accordingly, it is expected that:

H1b. The positive effect of mental segregation on tax compliance is more pronounced in situations in which calculations of the tax due are not externally provided.

If budgets are tight, keeping a mental tax account and saving part of the revenue for tax payments could also affect other decisions. Dedicating a budget to a specific mental account for the tax due makes it easier to track how much net income is available for spending on private expenses. Thus apart from increasing tax compliance, mental segregation of the tax due from other revenue should also reduce the risk of overspending and going bankrupt. Hence it is assumed that:

H2a. Mental segregation of the tax due and the revenue reduces the risk of bankruptcy.

As before, an interactional effect of the decision frame and the extent the tax due is mentally segregated is expected for going bankrupt:

H2b. The effect of mental segregation on overspending is more pronounced in situations in which calculations of the tax due are not externally provided.

Another purpose of the present research is to explore for correlates of keeping a mental tax account. In a prior study (Muehlbacher and Kirchler 2013), mental segregation of the tax due and the revenue was positively correlated with age and attitudes towards taxes. When mental tax accounting affects tax compliance, it is important to gather knowledge about what determines mental accounting practices.

Method

Participants

The sample was recruited by announcements in the university building and in social networks on the internet. Overall, $N = 128$ subjects followed the invitation to participate in the lab experiment. Of these subjects, 56 percent were females and 44 percent males, and the mean age was 25.80 years old (standard deviation = 7.67, *range* = 18 - 70 years). 4% indicated to study economics or business administration. Participants were remunerated according to their choices in the experiment. Average earnings were 9.34 EUR (standard deviation = 2.49, *range* = 0.60-15.00 EUR).

Experimental procedure

The experiment was designed to simulate 9 business years of self-employed taxpayers. In each year participants earned taxable income by completing one or more tasks, and faced several consumption opportunities. At the end of each period, taxes had to be paid on the income gained during the business year. Except for the work tasks to be completed, the study was fully computerized by means of the experimental software z-tree (Fischbacher 2007).

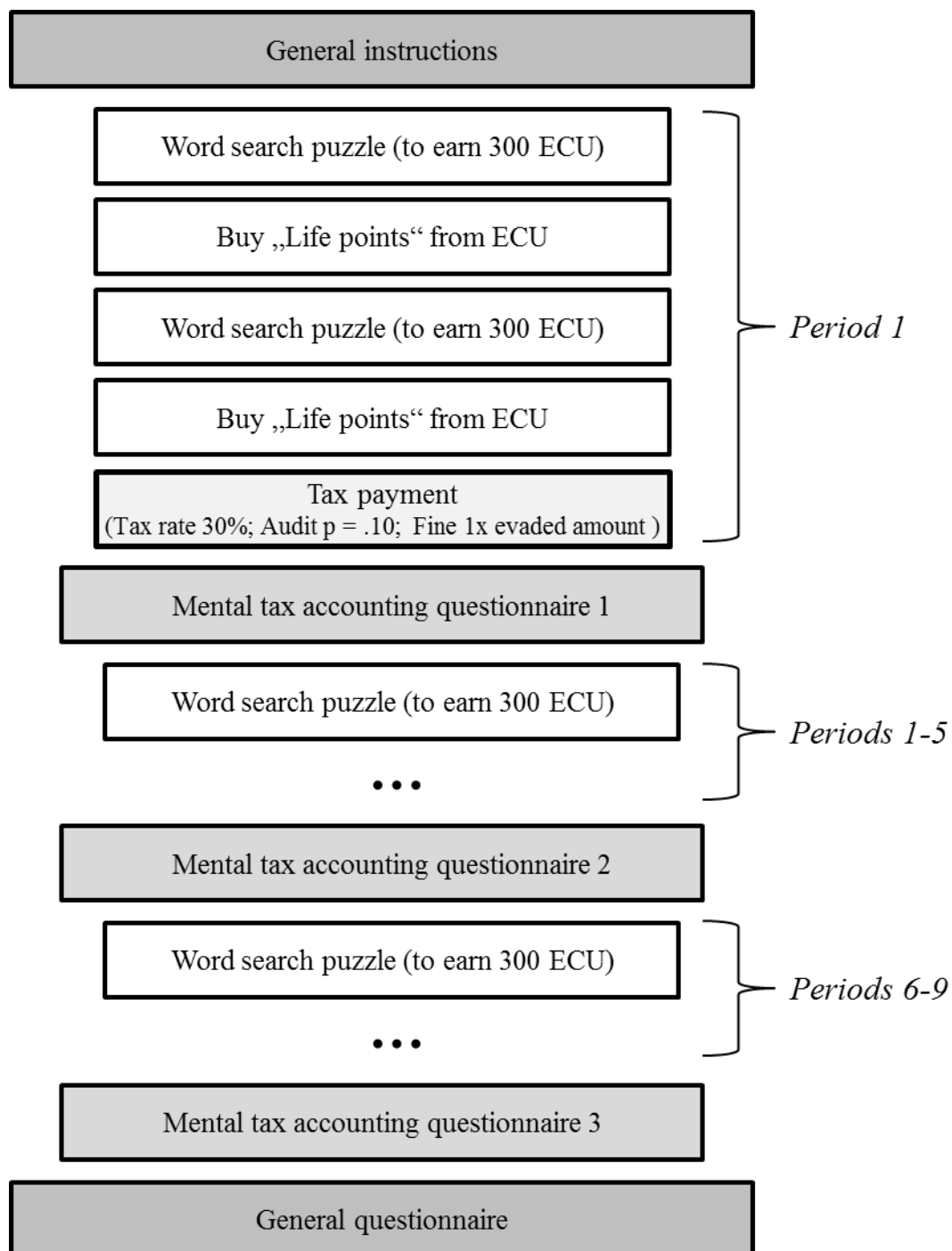
An overview of the experimental procedure is provided in Figure 1. In each period, participants completed between 2 and 4 word search tasks to earn their income; the exact

number of work tasks in period 1-9 was either A: 2, 3, 4, 3, 2, 4, 4, 2, 3, or B: 3, 2, 4, 4, 2, 3, 4, 3, 2. In a matrix of 10 X 10 letters, at least two of four specified words had to be found to receive a payment of 300 Experimental Currency Units (ECU). Since the number of tasks varied each period, total achievable gross income per period ranged from 600 to 1200 ECU.

Each work task was followed by an opportunity to consume all or part of the income just earned. After receiving the 300 ECU for completing one task, participants were offered the opportunity to buy “Life points” for 100 ECU a piece. These Life points were introduced to mimic the various hedonic opportunities in real life that can be realized by one’s earnings. Life points were changed into Euros (1 Life point = 1 Euro) as remuneration for participating in the experiment, hence participants were incentivized to invest the maximum amount of income in Life points. Note, however, that taxes were due at the end of each period, and to save enough money for the tax payment it was necessary that the amount spent for Life points did not exceed the net income. If participants spent more than their net income, they had no other choice than evading their tax due. In case of an audit, Life points had to be sold to settle the fine. However, the price achieved by re-selling Life points was much lower (1 Life point = 50 ECU) than for what they had been bought (1 Life point = 100 ECU). By contrast, if participants decided to save more of their income for the tax due than necessary, any remaining ECU after paying taxes were automatically changed into Life points at the end of each period. The price to be paid for Life points at the end of a period was higher (1 Life point = 200 ECU) than when buying immediately, providing an incentive to consume income early. Hence, participants had to decide whether and how many Life points they should buy at each opportunity and how much they wanted to save for their tax due. Table 1 provides an overview of the prices for buying and selling Life points at the various occasions.

Life points gathered within one period were not transferred to subsequent periods. Participants were endowed with a bonus of 3 Life points at the start of each period. The number of opportunities for buying further Life points varied with the number of work tasks between 2 and 4. The smallest amount possible to be invested in Life points was 1 ECU, and its maximum was restricted by the participant’s actual wealth level (i.e., the cumulative gross income earned in the respective period minus the amount already spent for Life points). Depending on the number of tasks completed in the respective experimental period and participants’ choices, participants ended up with different amounts of Life points indicating their personal success in the experimental “life”. After all 9 experimental periods ended, one period was drawn randomly by the computer, and the amount of Life points achieved in this period was paid in Euros (1 Life point = 1 Euro) as remuneration for participation.

Figure 1: Experimental Procedure



Note. Number of puzzles varied each period between 2 and 4 (= Income 600-1200), Audits occurred either in period 3 or 6

At the end of each experimental period 30 percent income taxes had to be paid. Participants were informed about the final tax due (ranging from 180-360 ECU depending on the experimental period), and were asked to indicate the amount of taxes they wanted to pay. They learned that with a probability of 10 percent their tax payment would be checked, and in case of evasion the difference to the full tax due and a fine equal to the amount evaded had to be paid. Periods to be audited were selected prior to the experiment. Half of participants were audited in period 3, and the other half in period 6.

If participants spent too much on Life points and therefore did not have enough money to settle their tax due (i.e., bankruptcy), they had to evade. In case of bankruptcy and an audit resulting in a fine, a mandatory exchange of Life points and ECU was undertaken. The amount of Life points necessary to pay the fine was automatically sold from the points acquired before. However, as mentioned earlier, the selling price for Life points was much lower than the price at which they had been acquired (see Table 1).

Table 1: Prices for Buying and Selling Life Points

Occasion	Price for 1 Life point
Buying at consumption opportunity	100 ECU
Selling to pay a fine	50 ECU
Buying at the end of experimental period	200 ECU

An overview of participants' finances was provided on the right hand side of the computer screen; examples are shown in Figures 2a and 2b. The screen showed the number of Life points acquired, the annual income achieved so far, and the current wealth level defined as the cumulative gross income in the current period minus the money spent on Life points. Depending on the experimental condition, income was either presented in terms of gross income (Figure 2a) or as net income (Figure 2b). In the latter case, the tax due accumulated by then was also included in the overview. In the net income condition, it should be easier for participants to keep track of their financial activities and to know precisely how much money is available for spending on Life points. In the gross income condition, however, participants were required to calculate for themselves what remains after taxes and before investing in Life points. To minimize miscalculations, each participant was provided with a pocket calculator.

Figure 2a: Example of Computer Screen for Gross Income Framing Condition

Year 1		
	Life Points:	5.00
	Annual Gross Income (so far):	300
	Current Wealth:	100

Figure 2b: Example of Computer Screen for Net Income Framing Condition

Year 2		
	Life Points: :	5.00
	Annual Net Income (so far): :	210
	Tax Due (so far): :	90
	Current Wealth: :	100

To summarize, three parameters were manipulated in the experiment. The most important treatment was whether income was displayed as gross income or as net income. Further manipulations regarded whether audits occurred in period 3 or 6, and how the number of work tasks and therefore income varied in course of the experiment. These manipulations were done solely for the purpose of counterbalancing their potential effects.

Measures

Besides observing participants' *tax compliance* (or tax payments in relation to the complete tax due), their expenses for Life points were transformed into a dichotomous variable indicating whether participants were still liquid when taxes were due. If at the end of one period they had enough money to pay their full tax due, the *bankruptcy* variable was set to 0, otherwise to 1.

Further, participants responded to short surveys at different points of time during the experiment. A 7-point Likert-type scale (1 – *I don't agree*; 7 – *I do agree*) measuring *mental tax accounting* was presented three times during the experiment: first, after participants completed their first tax report in period 1, next after period 5, and finally after period 9. The four items of the mental tax accounting scale were adapted from Muehlbacher and Kirchler

(2013) for context of the artificial situation of earning income and paying taxes in the lab ($\alpha_{\text{period1}} = .67$; $\alpha_{\text{period5}} = .76$; $\alpha_{\text{period9}} = .75$; *When I earn money, I automatically think about the incurring tax due; I know relatively well how much money I have to put aside for the incurring taxes; I think it is essential to put aside the necessary amount of money to pay the tax due; I never really look upon the money I pay as income tax as my money*). A high value on this scale indicates the practice of mentally segregating the tax due from the net income, a low value indicates mental integration. In other words, an individual scoring high on this scale seems to have understood that solely part of her income is available for private expenses.

A final post-experimental questionnaire assessed participants' tax morale by measuring attitudes towards tax paying. For this purpose, the 5-item measures for *voluntary compliance* ($\alpha = .80$) and *enforced compliance* ($\alpha = .83$) by Kirchler and Wahl (2010) were presented in a 7-point Likert-type scale (1 – *I don't agree*; 7 – *I do agree*).

Results

Tax compliance

Tax compliance was defined as the percentage of taxes actually paid relative to the full tax due, ranging from 0 percent (i.e., no taxes paid at all) to 100 percent (i.e., full compliance). Average tax compliance across all subjects, all conditions, and all periods was 62.97 percent (standard deviation = 42.38 percent). Descriptive statistics for all measures and their zero-order intercorrelations are presented in Table 2.

Data were analyzed in long format ($n = 1152$) by means of Tobit regression analysis; see Table 3. Tobit regression was applied because tax compliance is censored at 0 and at 100 percent. Table 3 shows normal estimated standard errors for regression coefficients as well as robust estimates of the error, being adjusted for 128 clusters at the individual level. The regression model includes all parameters from the experiment (experimental income, framing of income, experimental period, fined in previous period), participants' socio-demographic characteristics (age, sex, being a student of economics), and the measure for mental tax accounting; since mental tax accounting was measured at three points of time during the experiment, its value from experimental period 1 was used as predictor for period 1-4, the value from period 5 for period 5-8, and the value from period 9 for period 9. Further, to test whether mental tax accounting is of lesser importance when earnings were presented as net income, the interaction term of framing of income and mental accounting was included.

Table 2: Zero-order Intercorrelations (Pearson Coefficients)

<i>Variable</i>	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Compliance ^a	62.97	42.38											
2. Bankruptcy ^b	.42	.49	-.69***										
3. Mental tax accounting	4.29	1.49	.31***	-.28***									
4. Framing of income ^c	.50 ^g	.50	.03	-.04	-.02								
5. Experimental period	5.00	2.58	.06*	-.04	.12***	.00							
6. Experimental income	900.00	245.06	.06*	.03	-.03	.00	.00						
7. Fined previously ^d	.06	.24	-.15***	.11***	-.08**	-.02	.12***	.00					
8. Age	25.80 ^g	7.67	.12***	-.10***	.20***	.05 ^g	.00	.00	-.03				
9. Sex ^e	.56 ^g	.50	.01	.01	.07*	.09 ^g	.00	.00	.04	-.04 ^g			
10. Economics student ^f	.04 ^g	.19	.07*	-.05	.01	-.04 ^g	.00	.00	-.01	-.07 ^g	-.15 ^{†g}		
11. Voluntary compliance	4.78 ^g	1.28	.25***	-.19***	.27***	-.01 ^g	.00	.00	-.07*	.03 ^g	-.02 ^g	-.19* ^g	
12. Enforced compliance	4.00 ^g	1.52	-.04	-.04	.18***	-.02 ^g	.00	.00	.01	-.03 ^g	.07 ^g	.01 ^g	-.18* ^g

Note. $n = 11152$ observations except for where marked with ^g $n = 128$.

^a defined as amount of taxes paid in relation to the full tax due. ^b 0 = liquid, 1 = bankrupt. ^c 0 = net income, 1 = gross income. ^d 0 = not fined in previous round, 1 = fined in previous round.

^e 0 = male, 1 = female. ^f 0 = other study, 1 = economics.

[†] $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 3: Pooled Tobit Regression Predicting Tax Compliance

<i>Variable</i>	<i>Tax compliance</i>				
	<i>Coefficient</i>	<i>SE</i>	<i>t</i>	<i>Robust SE</i>	<i>t</i>
Mental tax accounting	14.97	3.88	3.86***	8.72	1.72 [†]
Framing of income ^a	-86.63	23.88	-3.63***	56.11	-1.54
Mental tax accounting*Framing of income	23.57	5.44	4.33***	11.92	1.98*
Experimental period	2.82	1.49	1.90 [†]	1.26	2.25*
Experimental income	0.03	0.02	2.11*	0.01	2.84**
Fined previously ^b	-67.58	16.08	-4.20***	16.84	-4.01***
Age	1.76	0.58	3.03**	1.14	1.55
Sex ^c	6.87	7.79	0.88	17.08	0.40
Economics student ^d	70.84	22.41	3.16**	55.87	1.27
Constant	-73.37	26.76	-2.74**	52.44	-1.40
σ	111.27	5.24		11.29	
Log likelihood		-2692.97		-2692.97	
		$\chi^2 = 189.84***$		$F = 4.62***$	

Note. $n = 1152$ observations. Criterion was tax compliance defined as amount of taxes paid in relation to the full tax due. *SE* = standard error. *Robust SE* = standard error adjusted for 128 clusters at individual level.

^a 0 = net income, 1 = gross income. ^b 0 = not fined in previous round, 1 = fined in previous round. ^c 0 = male, 1 = female. ^d 0 = other study, 1 = economics.

[†] $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

As expected, framing of income, mental tax accounting, and the interaction of both are related to *tax compliance*. Compliance was higher when income was displayed as net income and when the measure for mental tax accounting indicated mental segregation of the tax due. The significant interaction suggests that mental accounting was more important for compliance when income was displayed gross (or when participants had to compute by themselves the net income available for spending) than when income was presented net. Significance of the interaction remains the same when applying robust standard errors.

Compliance was further related to experimental period and experimental income, and seems to drop sharply after having received a fine in the previous period (i.e., a bomb crater effect; see Kastlunger et al. 2011; Mittone 2006). These relations are also significant when testing with robust standard errors. In addition, age and being an economics student was related with compliance. However, with robust standard errors age and the study discipline do not reach statistical significance.

Bankruptcy

Participants were classified as bankrupt when expenses for Life points during one business year exceeded annual net income. In this case, the subject did not have enough money left to cover all or part of the tax due. Across all conditions and periods, *bankruptcy* occurred in 42.4 percent of observations.

Data were analyzed in long format ($n = 1152$) by logit regression analysis; see Table 4. Again both types of standard errors for the coefficients are reported in Table 4: the normal estimates based on the pooled data and robust standard errors based on clusters at the individual level. As in the previous regression analysis, the model includes the experimental parameters (experimental income, framing of income, experimental period, fined in previous period), socio-demographic variables (age, sex, being a student of economics), the measure for mental tax accounting, and its interaction with framing of income.

Table 4: Pooled Logit Regression Predicting Bankruptcy

Variable	Bankruptcy				
	Coefficient	SE	<i>z</i>	Robust SE	<i>z</i>
Mental tax accounting	-.26	.06	-4.04***	.13	-2.06*
Framing of income ^a	.76	.39	1.92 [†]	.80	0.95
Mental tax accounting*Framing of income	-.23	.09	-2.59**	.17	-1.38
Experimental period	-.02	.02	-0.84	.02	-0.91
Experimental income	.00	.00	0.87	.00	0.95
Fined previously ^b	.73	.27	2.73**	.23	3.10**
Age	-.02	.01	-1.78 [†]	.02	-0.94
Sex ^c	.05	.13	0.42	.26	0.21
Economics student ^d	-.65	.35	-1.82 [†]	.73	-0.88
Constant	1.17	.43	2.70**	.72	1.63
Log pseudolikelihood		-727.05		-727.05	
		$\chi^2 = 115.92$ ***		$\chi^2 = 46.93$ ***	

Note. $n = 1152$ observations. Criterion was bankruptcy dummy coded as 0 = liquid, 1 = bankrupt. *Coefficient* in in log-odds units. *SE* = standard error. *Robust SE* = standard error adjusted for 128 clusters at individual level.

^a 0 = net income, 1 = gross income. ^b 0 = not fined in previous round, 1 = fined in previous round. ^c 0 = male, 1 = female. ^d 0 = other study, 1 = economics. [†] $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

The likelihood of going bankrupt was associated with the mental tax accounting measure and its interaction with framing of income, indicating that if income was displayed gross, mental accounting was more important than when income was displayed net. The relation with the framing dummy was only marginally significant. When applying the robust

estimation of standard errors, framing of income and the interaction term do not reach statistical significance, but the measure for mental tax accounting does.

Further, bankruptcy was related to being fined in the previous round, and with marginal significance also to age and to studying economics. However, age and studying economics are not significantly related to bankruptcy when applying robust standard errors.

Correlates of mental tax accounting

Mental tax accounting was measured three times during the experiment (period 1, 5, and 9). As mentioned earlier, its value from experimental period 1 was used for period 1-4, the value from period 5 for period 5-8, and the value from period 9 for period 9. The average across all conditions and periods was 4.29 (standard deviation = 1.49).

The correlations of mental tax accounting and all other variables of the study are presented in Table 2. Mental tax accounting was positively related to experimental period and participants' age, suggesting that experience with paying taxes enhances segregation of the tax due. Female participants have a stronger tendency for segregation, and receiving a fine seems to enhance mental integration of income and taxes. As in a previous study (Muehlbacher and Kirchler 2013), mental tax accounting was positively related to the two measures of tax morale: voluntary and enforced compliance.

Discussion

Mental accounting theory (Thaler 1999) describes a measure for keeping track of financial activities. By categorizing expenses to separate mental accounts, an individual should avoid spending too much on things he or she likes, in order to save enough money for less attractive, but necessary payments. Prior research suggested that mental accounting also plays a role for tax compliance (Adams and Webley 2001; Ashby and Webley 2008a, 2008b; Muehlbacher and Kirchler 2013). Based on prospect theory (Kahneman and Tversky 1979), we argued that keeping a mental account dedicated to taxes would lead to employing expected net income as a reference point in the compliance decision, and consequently would lead to higher tax compliance.

In line with our predictions, a psychological measure for the individual tendency towards segregating the tax due from other revenue was positively related to observed compliance in our experiment (*H1a*). As expected, the relation was stronger when the tax due was not calculated by the computer and displayed on the screen, than when the budget available for spending had to be calculated by participants on their own (*H1b*). Further, mental accounting

seems to prevent bankruptcy; participants without a mental tax account were prone to spend more than their net income for private consumption (*H2a*), and consequently faced liquidity problems when taxes had to be paid. The hypothesized interactional effect of framing income as net or gross and mental tax accounting (*H2b*) reached statistical significance only for the pooled data, but not when adjusting standard errors for clusters at the individual level.

These findings are in line with previous research reporting a positive relation of tax compliance and mental segregation of the tax due from the revenue (Adams and Webley 2001; Muehlbacher and Kirchler 2013). However, prior studies relied on self-reports about compliance behavior, a method that is frequently criticized for being affected by social desirability and for allowing only limited inferences about causality when collected in cross-sectional designs (e.g., Gërzhani 2007). Thus the experimental evidence presented here provides important additional empirical support for the relevance of mental accounting in tax compliance decisions.

A further finding of our study regards correlates of mental tax accounting. Since our analysis is explorative and based on zero-order correlations, our observations can only cautiously be interpreted. In line with previous findings (Muehlbacher and Kirchler 2013), participants' ages and attitudes towards taxpaying were positively related to our measure for mental segregation of the tax due. Older taxpayers seem to pursue more favorable mental accounting strategies, and segregation of the tax due is associated with positive attitudes towards taxpaying. In addition, mental segregation of the tax due increases over experimental periods and therefore with experience in taxpaying. It seems that accurate administration of tax issues is a skill that is learned over time. By contrast to the prior survey study, in the present experiment mental tax accounting was additionally related to participants' sex, with females having a stronger tendency for mental segregation.

Experiments in tax compliance research must be viewed with some caution. Though behavior of participants is typically incentivized and thus should be less prone to social desirability, external validity of experimental observations has often been doubted. For instance, the artificial situation in the lab has been criticized, sometimes on the basis that paying taxes to the experimenter has no real meaning. Also, the representativeness of student samples for the general population of taxpayers is sometimes questioned. Typically students are younger than the average taxpayer, they come from wealthier families, and - most importantly - they have little experience in paying taxes (for summaries of the critique on tax compliance experiments see Alm, Bloomquist, and McKee 2015; Muehlbacher and Kirchler in press; Torgler 2002). However, for our research purpose having participants with a lack of

experience in paying taxes seems advantageous. Using naïve subjects such as students allowed for observing the development of mental accounting strategies after starting a business. Experienced taxpayers would have brought strategies from their daily routine to the lab.

A further limitation of our study regards the experimental manipulation of framing of income. In the net income treatment additionally to providing the information how much net income is available for private spending, also the tax due was explicitly indicated on the computer screen. This could have induced a moral imperative that was not present in the gross income treatment, and have triggered moral considerations in the tax compliance decision.¹

Our findings show the relevance of mental accounting for tax compliance of self-employed taxpayers. As noted in the introduction, particularly the first years of being self-employed bear several financial pitfalls that often lead to bankruptcy. By contrast to employees, the self-employed have to handle their tax issues on their own, and are well advised to put aside enough of their income to settle the tax due. In specialized courses addressing business start-ups, the self-employed should be reminded of their tax liabilities, and could be instructed in accurate bookkeeping and administration of tax payments. The lesson to be learned in such courses was verbalized by a participant in an earlier study: “I transfer about 40 percent of revenues immediately to an extra bank account for taxes and social insurance, to avoid unpleasant surprises” (Muehlbacher and Kirchler 2013, 419).

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Publication 2

Kirchler, E. & **Hartl, B.** (2013). Ökonomische Psychologie. In M. A. Wirtz (Hrsg.), Lexikon der Psychologie (16. Aufl., S. 1121 und 17. Aufl., S. 1191, 2014). Bern: Huber.

Ökonomische Psychologie

(= ö. Ps.) [engl. *economic psychology*; gr. *oἶκος* (*oikos*) Haus(halt), *νόμος* (*nomos*) Gesetz], **[AO, SOZ, WIR]**, Teilgebiet der Wirtschaftspsychologie, dessen Gegenstand das Erleben und Verhalten von wirtschaftenden Individuen und Gruppen in Haushalten, Unternehmen, auf Märkten und im Staat darstellt. Die ö. Ps. befindet sich im Spannungsfeld zwischen Ökonomie und Ps., wobei ein wesentlicher Unterscheid zwischen beiden Disziplinen die Dominanz des theoretischen Modells des *Homo oeconomicus* (Homo-oeconomicus-Modell) in der Ökonomie darstellt. Die ö. Ps. erforscht ökonomische Entscheidungen und Abweichungen vom Rationalmodell, sogenannte Entscheidungsanomalien (siehe auch Heuristik, Prospect-Theorie, Endowment-Effekt, sunk-cost effect, Meliorationsprinzip), Lagentheorien über ökonomische Phänomene, Konsumgütermärkte, Arbeitsmärkte, Kapitalmärkte, das Verständnis von und den Umgang mit Geld in verschiedenen Formen, Schattenwirtschaft und Steuerverhalten (Steuerpsychologie), ökologisches Verhalten, Wohlstand und Wohlbefinden.

Publication 3

Kirchler, E. & **Hartl, B.** (2013). Steuerpsychologie. In M. A. Wirtz (Hrsg.), Lexikon der Psychologie (16. Aufl., S. 1490-1491 und 17. Aufl., S. 1598-1599, 2014). Bern: Huber.

Steuerpsychologie

(= S.) [engl. *psychology of tax behavior*], [AO, EM, KOG, SOZ, WIR], Teilgebiet der Wirtschaftspsychologie, dessen Gegenstand das Wissen über staatliche Regulation und Steuern, Einstellungen (Einstellung) und Motivation sowie das Verhalten von Individuen und Unternehmen gegenüber Abgaben und Steuern bildet. Die Anfänge der S. gehen maßgeblich auf Günter Schmolders zurück, der sich mit Fragen der Steuerbelastung, Steuermoral, Steuermentalität und des Steuerwiderstands auseinandersetzte. Zentrales Thema der S. sind Determinanten von Steuerehrlichkeit und -hinterziehung. Die zahlreichen in der sozialwiss. Literatur beschriebenen Determinanten können nach Kirchler (2007) in fünf Kategorien eingeteilt werden:

- (1) *Politische Perspektive*: Aus politischer Perspektive beeinflussen Charakteristika der Finanzpolitik und des Steuersystems, insbes. Die Komplexität der Steuergesetze und die Höhe der Steuersätze, das Steuerverhalten.
- (2) *Sozialps. Perspektive*: Der Einfluss von Wissen über Steuergesetze, Einstellungen und soziale Repräsentationen, Normen, wahrgenommener prozeduraler und distributiver Gerechtigkeit (Gerechtigkeit, Gerechtigkeitsprinzip) wird untersucht. Das Konzept der motivationalen Grundhaltungen der Steuerzahler (*motivational postures*) von Braithwaite fasst die Einstellungen, Bewertungen und Erwartungen einer Person gegenüber Steuern und der Steuerbehörde zusammen. Abhängig vom Muster motivationaler Grundhaltungen nehmen Steuerzahler unterschiedliche Positionen ein: Ein großer Prozentsatz der Steuerzahler zahlt ehrlich Steuern und ist nicht bestrebt, Steuern zu hinterziehen (commitment). *Capitulation* beschreibt eine Haltung, wonach Steuerzahler den Gesetzen entsprechend handeln, obwohl sie Steuern vermeiden möchten. *Resistance* und *disengagement* beschreiben Motivationsmuster, die zur bewussten Entscheidung gegen Kooperation in Form von Widerstand oder Ignoranz der staatlichen Regeln führen. Die motivationale Grundhaltung des *game-playing* beschreibt schließlich eine negative Einstellung der Steuerzahler zu Staat und Steuergesetzen und den Versuch, Gesetze geschickt zu umgehen. Sie suchen nach Schlupflöchern im Steuergesetz und versuchen mehr oder minder legal, der Steuerlast zu entkommen.

(3) *Perspektive der rationalen Entscheidungsfindung* (Entscheiden,

Entscheidungstheorie): Die Entscheidung zur korrekten Entrichtung der Steuern stellt ein soziales Dilemma dar, d.h. eine Situation, in der die Interessen des Einzelnen in Konflikt mit den kollektiven Interessen stehen. Der individuelle Nutzen ist dann am höchsten, wenn ein Steuerpflichtiger keine Steuern entrichtet und dennoch Leistungen des Staates (öffentliche Güter) in Anspruch nehmen kann, die durch Steuerbeiträge finanziert werden. Aus ökonomischer Sicht (Homo-oeconomicus-Modell) sind die Prüfwahrscheinlichkeit, das Strafausmaß bei Zuwiderhandeln sowie die Einkommenshöhe und Steuerrate dafür entscheidend, ob eine Person ehrlich ihre Steuern zahlt oder nicht. Zahlreiche empirische Studien bestätigen die Wirksamkeit von Kontrollen und Strafen. Allerdings sind die Effekte geringer als theoretisch erwartet, sodass anzunehmen ist, dass das Steuerverhalten außer von rationalen Überlegungen von weiteren Faktoren abhängt. Aus der Perspektive rationaler Entscheidungen sind auch Entscheidungsheuristiken (Heuristik) oder das Framing der Entscheidungssituation relevant. Die Prospect-Theorie von Kahneman und Tversky findet in der S. unter anderem zur Erklärung von sog. *Withholding*-Phänomenen Anwendung. Withholding-Effekte beziehen sich auf riskantes, steuervermeidendes Verhalten von jenen Steuerzahlern, die zu geringe Steuervorauszahlungen leisteten und bei der Anfertigung der Steuererklärung feststellen, dass sie eine Steuerschuld haben, während jene Steuerzahler, die zu hohe Vorauszahlungen leisteten, sodass ein Guthaben resultiert, risikovermeidende Handlungen setzen und ehrlicher ihre Steuern zahlen. Laut Prospect-Theorie resultiert in Verlustsituationen Risikofreude, während in Gewinnsituationen, wie sie bei der Erwartung einer Steuerrückerstattung gegeben sind, risikoaverse Handlungen gesetzt werden (Verlustaversion).

(4) *Möglichkeiten zur Steuerhinterziehung* (Unternehmerische Selbstständigkeit):

Selbstständig Erwerbstätige und unternehmerisch tätige Steuerzahler sind in der S. von besonderem Interesse. Sie zahlen im Ggs. zu Netto-Lohnempfängern Steuern «out of pocket» und dürften deshalb ein intensiveres Verlustempfinden haben als jene Personen, deren Steuern vom Bruttogehalt einbehalten wurden. Laut Theorie der mentalen Buchführung von Richard Thaler könnten selbständig Tätige entweder (a) Bruttoeinnahmen als ihr eigenes Vermögen betrachten und nicht zwischen tatsächlichem Einkommen, den Sozialabgaben und dem Steueranteil unterscheiden (*Integration*) oder (b) sie verstehen sich als «Verwalter» des Geldes, das sie zu einem

späteren Zeitpunkt als der Einnahme aufgrund ihrer unternehmerischen Tätigkeit als Steuern abführen müssen und trennen den Steueranteil mental oder physisch von ihrem Nettoeinkommen. Die Wahrscheinlichkeit der Steuerhinterziehung dürfte im Falle der Integration geringer sein als im Falle mentaler Segregation.

- (5) *Interaktion zwischen Steuerbehörde und Steuerzahlern*: Die Beziehung zwischen Steuerbehörde und Steuerzahlern bestimmt das Steuerklima, das auf einem Kontinuum von antagonistischem zu synergistischem Klima beschrieben werden kann. Herrscht ein antagonistisches Klima (*cops and robbers*) vor, so arbeiten Steuerzahler und Steuerbehörde gegeneinander. Steuerzahler fühlen sich von der Behörde verfolgt, die wiederum annimmt, dass die Bürger Möglichkeiten nutzen würden, Steuern zu umgehen oder zu hinterziehen. Herrscht hingegen ein synergistisches Klima (*service and client*) vor, so teilen Steuerzahler und Behörde dieselben Ziele und kooperieren. Die Steuerbehörde agiert in transparenter Weise und wird von Steuerzahlern als Autorität akzeptiert, die Dienstleistungen für die Gemeinschaft verrichten. Ausgehend vom antagonistischen oder synergistischen Klima werden im *Slippery-Slope-Rahmenmodell* (Kirchler 2007) erzwungene und freiwillige Steuerehrlichkeit unterschieden. Freiwillige Steuerehrlichkeit resultiert aus dem Vertrauen in den Staat und in die Behörden. Fehlt das Vertrauen, so kann Steuerehrlichkeit auch erzwungen werden, sofern die Behörden über ausreichend Macht verfügen und durch effiziente Kontrollen und wirksame Strafen Steuerehrlichkeit erzwingen können. Geringe Steuerehrlichkeit ist dann zu erwarten, wenn Behörden die Mittel fehlen, Steuerzahler durch abschreckende Maßnahmen zur Ehrlichkeit zu zwingen und die Bürger gleichzeitig den Behörden und dem Staat gegenüber misstrauisch sind.

Publication 4

Hartl, B. & Kirchler, E. (2014). Schattenwirtschaft. In M. A. Wirtz (Hrsg.), Dorsch – Lexikon der Psychologie (17. Aufl., S. 1450-1451). Bern: Verlag Hans Huber.

Schattenwirtschaft

(= S.) [engl. *Shadow Economy*], S. bezieht sich im weitesten Sinne auf alle wirtschaftlichen Tätigkeiten, die außerhalb der statistisch erfassten Wirtschaft stattfinden. Die exakte Zuordnung wirtschaftlicher Aktivitäten zur S. variiert in der Literatur: Meist werden illegale Aktivitäten (z.B. Schwarzarbeit und Steuerhinterziehung) und legale Aktivitäten, (z.B. Nachbarschaftshilfe) unterschieden.

Das Ausmaß und die Entwicklung der S. kann mittels direkter (z.B. Prüfungen, Befragungen) oder indirekter (z.B. Analyse von Arbeitsmarkt- und anderen Indikatoren, Simulationen) Methoden bestimmt werden. Da die Anwendung direkter Methoden nur unzureichend Informationen über das Ausmaß nicht erfasster wirtschaftlicher Aktivitäten liefern kann, werden häufig verschiedene Indikatoren zur Schätzung der S. herangezogen (Schneider, 2011). Unter anderem geben der veränderte Bargeldumfang in der Wirtschaft, die Variation im Verbrauch von Elektrizität oder die Differenz zwischen Haushaltseinnahmen und –ausgaben Auskunft über die Veränderung der Höhe der S. Aus ökonomischer Sicht steigt das Ausmaß an S., wenn die damit verbunden Aktivitäten im Vergleich zu offiziellen Aktivitäten profitabel sind und demnach die Einnahmen hoch, aber die möglichen Kosten (z.B. Strafen) gering sind. Als Ursachen für S. werden häufig steuerliche Belastungen, hohe Sozialversicherungsabgaben, Arbeitslosigkeit und steigende staatliche Regulierung der offiziellen Wirtschaft und komplexe Bürokratie genannt. Die Forschung über die S. konzentriert sich vor allem auch auf die Thematik der Steuerhinterziehung, also darauf, dass Individuen oder Unternehmen auf illegale Weise weniger Steuern zahlen, als das Gesetz vorschreibt (Kirchler, 2007).

Publication 5

Kirchler, E. & **Hartl, B.** (2015). Tax avoidance, tax evasion, and the shadow economy. In M. Altman (Hrsg.), *Real-world decision making. An encyclopedia of behavioral economics* (S. 431-432). Santa Barbara, CA: Greenwood.

Shadow economy

(‘underground economy’ or ‘hidden economy’), in the broadest sense, refers to economic activities that take place outside the official economy and are not declared for tax purposes. Some of the vast areas of shadow economy are black labour and tax evasion as well as do-it-yourself activities and neighbourly help. The term ‘shadow economy’ refers to both legal and illegal activities.

The assignment of economic activities to shadow economy varies in the literature. Feige (1990) distinguishes between (a) illegal economy (e.g., production of prohibited substances), (b) unreported economy (e.g., tax evasion), (c) unrecorded economy (e.g., household productions), and (d) informal economy (e.g., black labour). Schneider (2000, p. 79) proposes a fourfold table, differentiating between legal and illegal activities as well as monetary and nonmonetary transactions.

The extent and growth of shadow economy can be measured with direct (e.g., audits, surveys) and indirect (e.g., indicators; simulation models) methods. As shadow economy is hardly directly measured, indicators are often used to estimate shadow activities (Schneider, 2011; Schneider & Enste, 2000):

- (a) Currency Demand Approach: Changes in cash flow can act as an indicator, as it is assumed that cash payment is common in shadow economy in order to leave no traces.
- (b) Labour market indicators (e.g., labour force participation rate or growth rate of the total labour force): if total labour force participation rate is assumed to be constant, a change can act as an indicator of shadow economic activities.
- (c) Discrepancy between national expenditure and income statistics: the gap between income measure of GNP (Gross National Product) and expenditure measure of GNP can be used as an indicator of shadow economic activities.
- (d) Physical inputs (e.g., electricity consumption): the growth of shadow economy is calculated as the difference between the growth of electricity consumption and the growth of official GDP (Gross Domestic Product).
- (e) Transaction Approach: it is assumed, that there is a constant relation between the volume of transaction and official GNP over time. The GNP in the shadow economy is calculated as the difference between the official GNP and the nominal GNP (which is based on the value of total known transactions in the national economy).

Another method to calculate the growth and extent of the shadow economy is the simulation approach which explicitly considers multiple causes of and multiple effects of shadow economy. The model approach uses structural equation models to estimate unobservable variables (Kirchler, 2007, p. 16).

The main cause of shadow economy is the rise of the burden of taxes liability and social security contributions. It is assumed that a higher tax burden leads to an increase of underground economic activities. Further, unemployment, increasing regulation in the official economy and bureaucratic burden, forced reduction of weekly working hours, earlier retirement and declining tax morale have to be mentioned as important influential factors (Schneider, 2000, p. 82).

Tax evasion is one of the best investigated areas of shadow economy. Tax evasion refers to the process whereby individuals or companies evade taxes by breaking the law, that is, they illegally pay less tax than the law mandates. Tax evasion can involve acts of omission or commission (e.g., failing to report certain assets or deliberately issued false reports) but excludes inadvertent non-compliance resulting from lack of knowledge, memory lapses or calculation errors (Kirchler, 2007).

In contrast, the term tax avoidance describes the process to reduce the amount of tax burden using options within the brackets of the law. Tax avoidance is not illegal although it is against the spirit of the law. Reduction of tax liability occurs by taking advantages of loopholes in the law (Kirchler, 2007). For causes, determinants and models of tax behaviour see [tax compliance](#).

Curriculum Vitae

Persönliche Daten

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Lebenslauf mit akademischer Laufbahn

Seit März 2013	Projektmitarbeiterin an der Universität Wien Institut für Angewandte Psychologie: Arbeit, Bildung, Wirtschaft <i>„Der Einfluss der Macht der Steuerbehörde auf das Vertrauen in die Steuerbehörde und Konsequenzen für den Steuerbeitrag“ (FWF-Projekt)</i>
Seit März 2013	Externe Lehrende an der Universität Wien
Mai 2012 – März 2013	Prae-Doc Assistentin Karenzvertretung an der Universität Wien Institut für Angewandte Psychologie: Arbeit, Bildung, Wirtschaft
Sept. 2011-Mai 2012	Projektmitarbeiterin an der Universität Wien

Institut für Angewandte Psychologie:
Arbeit, Bildung, Wirtschaft
*„Literaturanalyse zur mentalen Buchführung von
selbstständigen Steuerzahlern“*

Seit Oktober 2011	Doktorat an der Universität Wien
Juni 2011	Magisterabschluss in Psychologie
WS 2006-Juni 2011	Diplomstudium Psychologie Universität Wien Schwerpunkt: Wirtschaftspsychologie

Berufspraxis und Praktika

Nov. 2010-April 2011	Praktikum an der FH Wien, Abteilung Marketing & Sales
August/September 2010	Praktikum bei Hogrefe Austria

Lehrveranstaltungen

Seit WiSe 14	Forschungswerkstatt Wirtschaftspsychologie (Betreuung von Diplomarbeiten); <i>Universität Wien</i>
WiSe 13- SoSe 14	Bachelorarbeit I (Empirisches Praktikum); <i>Universität Wien</i>
Seit WiSe 13	EC Arbeits-, Organisations- und Wirtschaftspsychologie; <i>Universität Wien</i>

Wissenschaftliche Vorträge

Hartl, B., Muehlbacher, S., & Kirchler, E. (2012). Mental Accounting in Konsumentscheidungen: Der Einfluss unterschiedlicher Einnahmequellen auf das Ausgabeverhalten. 10. Tagung der Österreichischen Gesellschaft für Psychologie, ÖGP, Graz, Österreich, 12–14 April 2012.

Hartl, B., Muehlbacher, S., & Kirchler, E. (2012). Mental Accounting in Konsumentscheidungen. Poster an der “JungwissenschaftlerInnen diskutieren ihre Forschung” Posterausstellung an der Fakultät für Psychologie, Wien, 25.06.2012.

Hartl, B., Muehlbacher, S., & Kirchler, E. (2012). Mental Accounting and Consumer Decisions: Income Source Effects. Poster an der IAREP 2012 Conference, IAREP, Wroclaw, Polen, 05 – 08 September 2012.

Muehlbacher, S., Hartl, B. & Kirchler, E. (2013). Mental accounting in consumer decisions. On the impact of income source on spending behavior. 55th Conference of Experimental Psychologists (TeaP), Vienna, Austria, March 24.-27. 2013.

Hartl, B., Muehlbacher, S. & Kirchler, E. (2013). Gender stereotypes of leaders: An analysis of contents of obituaries. Poster presented at the 16th EAWOP Congress 2013, Münster, Germany, 22-25 May 2013.

Hartl, B., Muehlbacher, S., & Kirchler, E. (2013). Mental accounting in the context of consumer decision making. Poster presented at the 16th EAWOP Congress 2013, Münster, Germany, 22-25 May 2013.

- Hofmann, E., Hartl, B., Gangl, K., Hartner-Tiefenthaler, M., & Kirchler, E. (2014).
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.]. 11. Tagung Österreichische Gesellschaft für Psychologie,
Vienna, Austria, 24-26 April 2014.
- Hartl, B., Hofmann, E., Hartner-Tiefenthaler, M., Gangl, K., & Kirchler, E. (2014).
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.]. 11.
Tagung Österreichische Gesellschaft für Psychologie, Vienna, Austria, 24-26
April 2014.
- Muehlbacher, S., Hartl, B. & Kirchler, E. (2014). Mental Accounting als
Persönlichkeitsmerkmal. Eine Skala zur Erfassung der mentalen Buchführung.
11. Tagung Österreichische Gesellschaft für Psychologie, Vienna, Austria, 24-
26 April, 2014.
- Muehlbacher, S., Hartl, B., & Kirchler, E. (2014, April). Mental reframing in the Asian
disease problem: A verbal protocol analysis. Paper presented at the meeting of
EGPROC, Salzburg, Austria
- Hofmann, E., Hartl, B., Gangl, K., & Kirchler, E. (2014). Interview studies in tax
research. Using the example of interviews with Austrian taxpayers to assess
their perception of tax authorities' measures. 28th International Congress of
Applied Psychology. Paris, France, 8-13 July, 2014.
- Hofmann, E., Hartl, B., Gangl, K., Hartner-Tiefenthaler, M., & Kirchler, E. (2014).
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.]. 11. Tagung Österreichische Gesellschaft für Psychologie, Vienna, Austria, 24-26 April 2014.

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Hartl, B., Hofmann, E., Hartner-Tiefenthaler, M., Gangl, K. & Kirchler, E. (2014). Severe punishment or supportive procedures? The impact of coercive power and legitimate power on tax compliance. (Poster) 49. Kongress der Deutschen Gesellschaft für Psychologie, Bochum, Germany, 22-25 September 2014.

Hofmann, E., Hartl, B., Kirchler, E., & Muehlbacher, S. (2015). Gender stereotypes of leaders: A content analysis of obituaries. 17th Congress of the European Association of Work and Organizational Psychology, 20-23 May 2015, Oslo, Norway.

Gangl, K., Hofmann, E., Hartl B., & Kirchler, E. (2015). The double edged character of coercive power in social dilemmas. Evidence from a representative sample of self-employed taxpayers. 16th International Conference on Social Dilemmas, Hongkong, China, 23-26 July 2015.

Hofmann, E., Hartl B., Olson J., & Kirchler, E. (2015). Sanctions in different social dilemmas: Impact and intervening factors. 16th International Conference on Social Dilemmas, Hongkong, China, 23-26 July 2015.

Hofmann, E., Gangl, K., Hartl, B., Berkics, M. & Kirchler, E. (2015). Powerful authorities and trusting citizens: Interaction climate and tax compliance in Austria, Finland and Hungary. Invited speech at "The Informal Economy – Global and Local. An International Conference". The University of Sheffield, UK, Centre for Criminological Research, Sheffield, UK, 24-26 June 2015.

Hartl, B., Hofmann, E., Kirchler, E., & Penz, E. (2015). Do we need rules for 'what's mine is yours'? Attitudes towards the introduction of a governance system rationalizing depletion of resources in a collaborative consumption setting. 123rd Annual Convention of the American Psychological Association, Toronto, Canada, 6-9 August 2015.

Hartl, B., Hofmann, E., Kirchler, E., & Penz, E. (2015). Regulations within a collaborative consumption community? Attitudes towards the introduction of a governance system. IAREP/SABE Joint conference. Sibiu, Rumania, 3-6 September 2015.

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