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INCOME TAX VERSUS VALUE ADDED TAX: A MIXED-METHODS COMPARISON OF SOCIAL REPRESENTATIONS

Jerome Olsen¹, Christoph Kogler², Jennifer Stark³, Erich Kirchler⁴

Abstract

To date, tax research has strongly focused on income tax compliance. Meanwhile, a large proportion of tax revenue is raised by consumption taxes, such as value added tax (VAT). This study compared the respective social representations of income tax and VAT by employed and self-employed taxpayers. The aim was to gain an understanding of similarities and differences in the overall quantitative evaluation and qualitative content of the two taxes. For this purpose, we administered a free association task to employed (n = 140) and self-employed (n = 349) Austrian taxpayers with the stimuli *income tax* and *VAT* (between-subject design). Moreover, we measured emotional reactions and knowledge referring to the two types of taxes as well as individuals' mental accounting practices. Our results revealed that both taxes were evaluated negatively overall, although they did not differ from each other in their quantitative evaluation. Regarding employment status, self-employed taxpayers generated a larger number of negative associations, had higher knowledge, and expressed more negative emotions than employed taxpayers. The qualitative analysis also revealed that the social representations were specific to the two taxes. We conclude that findings from income tax research cannot be directly translated to the context of VAT.

1. INTRODUCTION

Since its introduction in the 1950s, value added tax (VAT) has developed into a key source of tax revenue. By 2012, it accounted for 19.5% of total tax revenue in member countries of the Organisation for Economic Cooperation and Development (OECD, 2014). Within the same period, the revenue from personal income tax stayed relatively stable, amounting to 24.5% of the total tax revenue in 2012 (OECD, 2015). Considering these proportions, the distinctive focus on income tax within the field of empirical tax research is surprising. One reason might be rooted in the unique structure of VAT, where suppliers act as tax collectors for the state and consumers carry the tax burden, thus involving three agents. This makes empirical research more challenging than in the case of income tax, which only involves taxpayers and the tax authorities.

To the best of our knowledge, a systematic analysis of how income tax and VAT are perceived by taxpayers in a comparative study is currently missing from the literature. We aim to address this gap by investigating similarities and differences between social representations of income tax and VAT. In doing so, we contrast evaluations, held concepts, shared beliefs, emotional reactions, and knowledge of the two taxes against each other. First, this investigation will reveal social representations for both types of taxes, whereas prior research focused on social

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representations of taxes in general (Kirchler, 1998; Kirchler, Maciejovsky, & Schneider, 2003; Schmolders, 1960). Additionally, in comparing VAT against income tax, the latter constitutes an adequate benchmark, because it is well-researched in terms of tax compliance compared with the former. Hence, apart from revealing similarities and differences in social representations per se, the results can serve as a basis for future research on VAT compliance.

The remainder of this section is organized as follows. Firstly, income tax and VAT are both briefly described in terms of their formal characteristics and possibilities for evasion. Secondly, social representations theory and the free association task are presented as means by which to empirically investigate the social representations of income tax and VAT by consumers and suppliers. Finally, we present the existing related literature together with the hypotheses for the quantitative analyses.

1.1 FORMAL CHARACTERISTICS OF INCOME TAX AND VAT

Personal income tax is a direct tax that is levied upon the income of a taxpayer (Schenk & Oldman, 2006). Most OECD countries employ different types of progressive income tax structures, in which tax rates grow with increasing income (OECD, 2016). In Austria, the location of the present study, the income tax of employed taxpayers is withheld by the employer and forwarded to the tax authorities each month. In comparison, self-employed taxpayers usually make quarterly pre-payments of their own income tax based on previously declared tax amounts (WKO, 2015). The actual amount of income tax is determined in the course of the annual tax declaration, leading to either a tax refund or an additional payment. Thus, employed taxpayers can evade income tax, for instance, by falsely claiming tax deductions. Meanwhile, self-employed taxpayers have more direct options for evasion, most notably understating personal income to reduce the tax base (Feinstein, 1991).

With regard to tax rates in Austria, from 2009 to 2015, annual incomes up to 11,000 euro were exempted, and three progressively increasing tax rates (36.5%, 43.2% and 50%) were then applied. The highest rate, 50%, was applied to incomes exceeding 60,000 euro annually. A tax reform in 2016 aimed at reducing the tax burden of low and medium income earners by introducing six tax rates (25%, 35%, 42%, 48%, 50% and 55%). Incomes of up to 11,000 euro are still exempted, but the highest tax rate was increased to 55% for annual incomes exceeding 1,000,000 euro (*Austrian income tax law, § 33 Abs. 1 EStG 1988*, 2015).

The traditional model of income tax evasion assumes that a taxpayer will evade taxes if it seems advantageous based on certain parameters, including income size, tax rate, fine level, and audit probability (Allingham & Sandmo, 1972). The authors have acknowledged that their theory is simple and may be criticized for ignoring non-monetary factors, which is an argument brought forward in the majority of psychological publications dealing with income tax. Many different approaches have been proposed since then to add to the understanding of tax compliance. In addition to deterrence (i.e. fine level and audit probability), many other factors, including knowledge, attitudes, different types of norms, justice perceptions, interindividual differences in taxpayers' motivation to comply, framing effects, and trust in the tax authorities, influence compliance behavior (Kirchler, 2007). However, the vast majority of these publications refer to the context of income tax compliance and not to other types of taxes.

VAT is a tax on general consumption and constitutes an indirect tax (Schenk & Oldman, 2006). It is collected from producers and distributors at different stages in the production and distribution process, and is assessed based on the value added to the goods and services at each stage. Businesses pay VAT on purchases from producers or suppliers and collect VAT on sales

to customers. The difference between paid and collected VAT is transferred to the tax authorities. Hence, the tax burden is carried by the final consumer who pays the tax as part of the price. In this chain, businesses supplying goods and services take over the role of tax collectors (James, 2015; OECD, 2014; see Webley & Ashby, 2010 for an explanatory sample calculation).

Until 2014, more than 160 countries have introduced VAT. The OECD average tax rate in 2014 was 19.1%. Austria introduced VAT in 1973 and the standard rate is currently 20% (unchanged since 1984). In addition to the standard rates, most countries have reduced rates for certain goods and services, such as books, food, postal services, culture, firewood, and transportation, with the aim of disburdening lower-income households. These lower rates are currently at 10% and 13% in Austria. In most countries, any business with a turnover exceeding a certain threshold must register for VAT payments. These thresholds vary considerably among countries (Austria: €30,000 in 2016; Charlet & Owens, 2010; OECD, 2014).

Evading VAT payments can occur on two levels: the individual level and the group level. On the individual business level, it can be evaded by not registering for VAT, underreporting sales, misclassifying commodities so that lower rates can be applied, and importing goods but not declaring them⁵ (Keen & Smith, 2006). On the group level, VAT can be evaded through collusion between consumers and suppliers by agreeing on a lower price so that VAT is not due. Given that the supplier does not file such a transaction, the seller's income tax is also evaded; this is called collaborative tax evasion (Balafoutas, Beck, & Kerschbamer, 2015; Boadway, Marceau, & Mongrain, 2002, Chang & Lai, 2004).

1.2 SOCIAL REPRESENTATIONS THEORY AS A RESEARCH FRAMEWORK

Taxes constitute a complex economic phenomenon (e.g., Cuccia & Carnes, 2001; Krause, 2000). Paired with their social relevance, they evoke discussions aimed at gaining a better understanding of this topic (Wagner, Duveen, Farr, Jovchelovitch, Lorenzi-Cioldi, Markova, & Rose, 1999). The phenomenon is evaluated during these discussions, thus leading to personal opinions and attitudes (Moliner & Tafarni, 1997), which are ultimately confounded with knowledge and emotions (el Sehity & Kirchler, 2006). These processes of familiarization result in shared representations (Wagner et al., 1999). Social representations theory provides a conceptual framework through which we can explore, describe, and explain psychosocial phenomena and processes (Wagner, 1994; Wagner et al., 1999).

Social representations can be described as systems of values, notions, ideas, knowledge, emotions and practices shared by a social group with respect to a socially relevant phenomenon, such as *income tax* or *VAT*. Instruments to investigate social representations incorporate qualitative and quantitative methods, and a mixed-methods approach is often recommended (el Sehity & Kirchler, 2006; Wagner et al., 1999). Among these, the free association task represents a popular approach. In this task, participants are presented with a stimulus and asked to generate associations that spontaneously come to mind, which they then evaluate as positive, neutral or negative (Nelson, McEvoy, & Dennis, 2000; Vergès, 1992).

The single associations represent the qualitative content, whereas the evaluations serve as quantitative information. The analyses reveal the attitude toward a stimulus as well as the

⁵ When importing goods from abroad as a business, the obligation to forward the VAT is shifted to the buyer of the commodity (called reverse charge). A business can evade the tax by not declaring the goods as imported (James, 2015).

concrete components of the representations and their relation to each other (Schnabel & Asendorpf, 2013; deRosa, 1995; Vergès, 1992). One advantage is grounded in the great amount of freedom of expression as individuals are not led into a predetermined direction by structured questions (Gangl, Kastlunger, Kirchler, & Voracek, 2012).

Within this theoretical framework, our aim is to compare social representations of income tax and VAT. We thereby try to answer how different groups of taxpayers (employed vs. self-employed) evaluate the two taxes (from negative to positive), and which distinct concepts, beliefs, emotional reactions, and level of knowledge can be observed. The following section introduces the related literature and derives concrete hypotheses for the analyses.

1.3 RELATED LITERATURE

Previous studies have suggested generally negative attitudes toward taxation (Kirchler, 2007). In this vein, Sussman and Olivola (2011) introduced the term “tax aversion” to describe the general desire to avoid taxes. Kirchler (1998) asked participants to spontaneously associate terms with the word “tax” and found that the content was predominantly negative. Hence, we expect (H1), the evaluations of associations for both taxes, to be predominantly negative.

One psychologically relevant difference that stems from the taxes’ formal properties is the salience, wherein indirect taxes are assumed to be less visible than direct taxes (Bird, 2010). Indeed, if consumers are shown tax-inclusive prices (rather than tax-exclusive prices), as is the case with VAT in most countries, the observed consumer demand decreases (Chetty, Looney, & Kroft, 2009). With regard to the perceived tax burden, the indirect presentation of a tax leads to an underestimation of the burden (Sausgruber & Tyran, 2005). In line with this finding, a review of the compliance costs of different taxes concludes that the main cost burden for individual taxpayers stems from income tax (Eichfelder & Vaillancourt, 2014). Based on the higher visibility of income tax for consumers and greater income tax compliance costs for self-employed taxpayers, we expect (H2), the stimulus *income tax*, to evoke a larger proportion of negative evaluations than *VAT*.

Regarding the employment groups, self-employed taxpayers pay their taxes out-of-pocket, whereas employed taxpayers’ income tax is withheld, which is assumed to cause a less pronounced loss perception (Kirchler, 2007; Kirchler & Maciejovsky, 2001; Yaniv, 1999). Kirchler (1998) argued that the perceptions of the self-employed can best be described with reactance theory, where taxes constitute a loss of freedom. As to VAT, we have already established that employed taxpayers tend to underestimate the extent of indirect tax when purchasing products, whereas the self-employed ones may still perceive it as administratively burdensome (Bird, 2010; Sausgruber & Tyran, 2005). Hence, (H3) self-employed taxpayers are expected to evaluate taxes more negatively than employed ones. We did not formulate any hypotheses for the share of neutral associations and plan to include this variable in our analyses for explorative purposes.

Given that emotions and knowledge are key components of social representations, we also incorporated these constructs in our study. In line with the hypotheses regarding the polarity of associations, we assume that (H4) negative emotional responses are stronger for *income tax* and among self-employed taxpayers. Additionally, due to their higher exposure to the topic of taxation, we hypothesize that (H5) the self-employed, in general, have higher knowledge about both taxes.

A qualitative interview study that investigated small business owners' perceptions of VAT found that participants' perceptions of the tax burden varied (Adams & Webley, 2001). Some business owners saw VAT as a burden on their businesses, whereas others perceived it as money belonging to the state. These different perceptions of VAT can be explained by mental accounting theory (Thaler, 1985, 1999), which describes how individuals organize and monitor their finances by having designated mental accounts for different financial activities (e.g., rent, food, and clothing). In this sense, business owners who perceive VAT as belonging to the tax authorities are suspected to have a designated mental account for collected taxes. Meanwhile, others integrate collected tax into the business turnover and perceive forwarding the tax as a loss. Quantitative studies that focused on income tax compliance have confirmed interindividual differences with regards to mental accounting practices and associations with tax compliance (Muehlbacher, Hartl, & Kirchler, 2015; Muehlbacher & Kirchler, 2013). To our knowledge, no study has quantitatively investigated mental accounting and perceptions of VAT. We expect (H6) a larger proportion of positive associations among those individuals with higher mental accounting scores for both taxes.

2. METHOD

2.1 PARTICIPANTS

A total of 489 individuals participated in the questionnaire study: 140 employed and 349 self-employed taxpayers. The sample of self-employed taxpayers can be further divided into three branches of industry: (1) *catering* ($n = 55$), restaurant, bar and hotel owners; (2) *crafts* ($n = 99$), carpenters, painters, plumbers, etc.; and (3) *consulting* ($n = 90$), coaches, consultants, and non-clinical psychologists. Mean age in the overall sample was 45.7 ($SD = 10.9$); 33.1% of the participants were female. Further socio-demographic information by sub-sample and business information for self-employed participants is provided in Table 1.

Table 1: Socio-demographic information by sub-sample.

	Self-employed				Overall ($n = 349$)	Employed ($n = 140$)
	Catering ($n = 55$)	Crafts ($n = 99$)	Consulting ($n = 90$)	Other ($n = 105$)		
Age	47.3 (10.7)	45.7 (9.5)	50.0 (9.1)	47.8 (9.6)	47.7 (9.7)	40.7 (12.1)
Sex (male %)	69.1%	80.8%	70.0%	74.3%	74.2%	48.6%
Experience	5.5 (1.4)	5.3 (1.6)	5.6 (1.3)	5.7 (1.4)	5.6 (1.4)	4.4 (1.9)
Education	3 (2)	3 (1)	4 (0)	4 (1)	3 (2)	3 (2)
Net income	3 (3)	3 (3)	6 (3)	5 (4)	4 (4)	3 (2)
Subject to VAT	100%	94%	92%	97%	95%	N/A
Hire tax consultant	95%	90%	82%	81%	86%	34%

Note. For Age and Experience, M and SD were computed, whereas we used Mdn and IQR for the ordinal scales Education and Net Income, respectively. Education was measured with 1 = *Apprenticeship*, 2 = *High School without higher education entrance*, 3 = *High School with higher education entrance*, and 4 = *University degree*. Net income was measured on a 7-point scale, starting with 1 = *up to €1,000*, followed by increases of €500 (e.g., €1,000–€1,500), until 7 = *more than €3,501*.

The sample size was predetermined based on a power analysis in G*Power with $\alpha = .05$, $1-\beta = .95$, and an expected effect size of $\eta_p^2 = .03$ (effect in the mid-range of a small effect⁶, corresponding to Cohen's $d = .35$). The main statistical test of the study was a 2 (stimulus) by 2 (employment status) MANOVA with two dependent variables (polarity and neutrality of the associations). However, the power analysis resulted in a sample size of $N = 344$, assuming equal group sizes. Our sample consisted of unequal group sizes in the factor employment. Thus, we increased the targeted number of participants and reached a final sample size of $N = 489$.

2.2 PROCEDURE

Data collection took place between December 2014 and April 2015. All respondents were contacted in person or via email, and asked to participate in a questionnaire study on taxes. The data collection started exclusively with a paper-pencil approach. For this purpose, the questionnaire, which took approximately 20 minutes to complete, was accompanied by a cover letter and a stamped return envelope. Questionnaires were handed out to self-employed business owners in the city of Vienna, and targeted three different branches of industry from the suppliers' side: (1) *catering*, (2) *crafts*, and (3) *consulting*. The overall response rate was 18.3% (30 out of 164 contacted individuals), well within the range of survey response rates in tax research (Kogler, Muehlbacher, & Kirchler, 2015: 28%; Lignier & Evans, 2012: 4.5%; Webley & Ashby, 2010: 13.5% and 18%). Nevertheless, data collection was extended to include an online questionnaire. Using the Aurelia database, which contained information of more than 370,000 companies throughout Austria, small to medium-sized businesses that fit the profiles of the targeted branches of industry were contacted via email, which contained a link redirecting them to the questionnaire⁷. Additionally, we collected data for a second sample of average consumers comprising a convenience sample of employed taxpayers.

2.3 MATERIAL

Following a mixed-methods approach, the questionnaire combined qualitative and quantitative parts, and comprised six sections. In the first section, participants were introduced to the study, presented with either the stimulus income tax or VAT⁸ (randomized between participants), and asked to write down up to nine associations that came to mind in relation to the respective stimulus. As a next step, participants were asked to read their associations again and to assign a valence to each association [positive (+), neutral (0), or negative (-)] to evaluate each association.

The second section assessed participants' general mental accounting practices. Individuals were asked to indicate their agreement with five items of a short version of the Mental Accounting Scale (Muehlbacher, Hartl, & Kirchler, 2014) on a seven-point scale ranging from 1 = *does not*

⁶ We were unable to identify prior research that provides a reference for an expectable effect size. Based on our general experience in the field of tax research, we expected an effect size in the range of small effects. Cohen (1988) classifies d from .20 to .50 as small, from .50 to .80 as medium, and above .80 as large.

⁷ An automated mail messaging program was used to send out the link. We do not know how many e-mail addresses were valid business addresses, nor how many mails were actually read. Unfortunately, we did not consider that the database contained all commercially registered businesses and those that were already closed, which were not checked when exporting the business information. Thus, we were unable to compute a valid response rate. The most conservative estimate was to use all finished online questionnaires divided by e-mail addresses used, leading to a response rate of 5.8%.

⁸ In Austria, the official term of value added tax is "Umsatzsteuer," which translates to turnover tax. However, the term "Mehrwertsteuer," which translates to "value added tax," is also commonly used to refer to VAT. Thus, the stimulus was presented as "Umsatzsteuer (=Mehrwertsteuer)," which corresponded to "turnover tax (=value added tax)."

apply to 7 = *fully applies* (e.g., “I classify my expenses into different categories; e.g., clothing, entertainment, education...;” $\alpha = .78$).

Section three served to assess participants’ personal attitudes toward taxes in general, and was adapted from the motivational postures subscale Commitment plus one item from the subscale Disengagement (Braithwaite, 2003; Rechberger, Hartner, & Kirchler, 2009). Participants were asked to indicate their agreement with nine statements on a seven-point scale ranging from 1 = *totally disagree* to 7 = *totally agree* (e.g., “Paying tax is the right thing to do;” $\alpha = .83$).

Section four assessed individuals’ feelings about both *income tax* and *VAT*. The order depended on the between-subject assignment to one of the two stimuli, wherein participants were first asked about their emotional responses corresponding to the association task, followed by the other tax type. To measure various types of positive and negative emotionalities, the Positive and Negative Affect Schedule (PANAS) (Krohne, Egloff, Kohlmann, & Tausch, 1996; Watson, Clark, & Tellegen, 1988) was administered, using a seven-point scale ranging from 1 = *very slightly or not at all* to 7 = *extremely* (e.g., “When I think about paying VAT, I feel distressed”).

In section five, participants’ knowledge about *income tax* and *VAT* was measured. Individuals were asked to reply to seven multiple choice questions about *income tax* and eight multiple choice questions about *VAT* by marking the correct answer from a set of five (e.g., “Who carries the VAT burden?”). We constructed these items for the purpose of this study. The order in the questionnaire corresponded to the procedure used with the PANAS.

Section six served to collect socio-demographic information. See <http://osf.io/phnm5> to access the original materials and data.

2.4 ANALYSIS

Free associations can be analyzed on a quantitative or qualitative level. The quantitative analyses focus on the ratio of positive, neutral, and negative evaluations. The qualitative level highlights the content of the associations and how they are organized.

Starting with the quantitative analyses, the evaluations assigned to each association with respect to the stimuli *income tax* or *VAT* were used to calculate two indices: a polarity index and a neutrality index. The polarity index refers to the difference between frequencies of positive and negative evaluations divided by the total frequency of evaluations. This index ranges from -1 to $+1$, with negative attitudes closer to -1 and positive attitudes closer to $+1$. The neutrality index was calculated by the frequency of neutral evaluations divided by the total frequency of evaluations. It ranges from 0 to 1 and represents the ratio of neutral associations (de Rosa, 1995, 1996). The indices were computed for each participant and then aggregated for the relevant groups of comparison.

To explore the structure of the social representations for the two stimuli, every single association was assigned to a category to aggregate the qualitative information. The categorical assignments, along with the variables stimulus, employment status, and evaluation of the underlying association, were used for a multiple correspondence analysis. This exploratory multivariate procedure was used with the aim of revealing the structure and patterns of a nominal data set by identifying dimensions that explain a maximum of inertia (a concept similar to variance). Using categories, instead of single associations, is more appropriate for the analysis of structure, as the information becomes more systematic, which is also most common in social representation research (Barthes & Jeziorski, 2012; Kirchler, 1998; Rodler, Kirchler,

& Hoelzl, 2001). The resulting dimensions, and the organization of data in relation to these dimensions, allow for a better interpretation of the overall structure of the social representations. Essentially, correspondence analysis works in a similar way as principal component analysis, but is applied to categorical data (Greenacre, 2007).

3. RESULTS

The results are presented in five main sections. Firstly, we analyze polarity and neutrality by stimulus and employment status. Secondly, we explore the semantic contents of the social representations. Thirdly, differences in emotional responses to the two stimuli by employment groups are tested. Fourthly, we investigate knowledge differences between the two employment groups for each of the two taxes. Finally, we examine the correlations among business characteristics, as well as those between such characteristics and polarity and neutrality⁹.

In the association task, 1,931 associations were produced overall, of which 870 were different. Participants freely associating to the stimulus *income tax* wrote down 985 associations (500 were different). In the group that was presented with the stimulus *VAT*, 946 associations were produced (445 were different). The average frequencies of associations for *income tax* were $M = 3.95$ ($SD = 2.18$) and $M = 3.94$ ($SD = 2.16$) in the case of *VAT*. Table 2 depicts the polarity (average evaluation of the respective stimulus) and neutrality (ratio of neutral associations) indices for both stimuli by sub-sample.

Table 2: Mean polarity and neutrality.

	Self-employed				Overall	Employed
	Catering	Crafts	Consulting	Other		
Income tax	$n = 30$	$n = 41$	$n = 50$	$n = 49$	$n = 170$	$n = 79$
Polarity	-.52 (0.62)	-.43 (0.63)	-.30 (0.63)	-.30 (0.67)	-.37 (0.64)	-.16 (0.61)
Neutrality	.18 (0.29)	.21 (0.33)	.23 (0.26)	.18 (0.26)	.20 (0.28)	.24 (0.28)
VAT	$n = 25$	$n = 58$	$n = 40$	$n = 56$	$n = 179$	$n = 61$
Polarity	-.14 (0.45)	-.23 (0.59)	-.30 (0.52)	-.24 (0.49)	-.24 (0.52)	-.09 (0.59)
Neutrality	.48 (0.36)	.36 (0.36)	.31 (0.30)	.39 (0.33)	.37 (0.34)	.36 (0.35)

Note. Indices are presented for *income tax* and *VAT*, divided by employment status and branch of industry. Standard deviations are given in parentheses.

3.1 ANALYSES OF POLARITY AND NEUTRALITY INDICES

3.1.1 Analysis of the total sample

To test our first hypothesis, we investigated whether the point estimates of the mean polarity by stimulus (*income tax* vs. *VAT*) were negative and whether the 95% confidence intervals of the means included zero. See the black dots in Figure 1 for a graphical presentation. The mean polarity for the stimulus *income tax* was $M = -.30$, 95% confidence interval (CI) $[-.38, -.22]$,

⁹ For clarity of presentation, the results part does not follow the usual separation of confirmation and exploration. Instead, all results are presented in the stated sequence in order to maintain a logical structure of analyzed content.

which did not include zero. The same was the case for VAT with a mean polarity of $M = -.20$, 95% CI $[-.27, -.13]$. Thus, we can confirm that the polarity of associations was predominantly negative for both stimuli (H1).

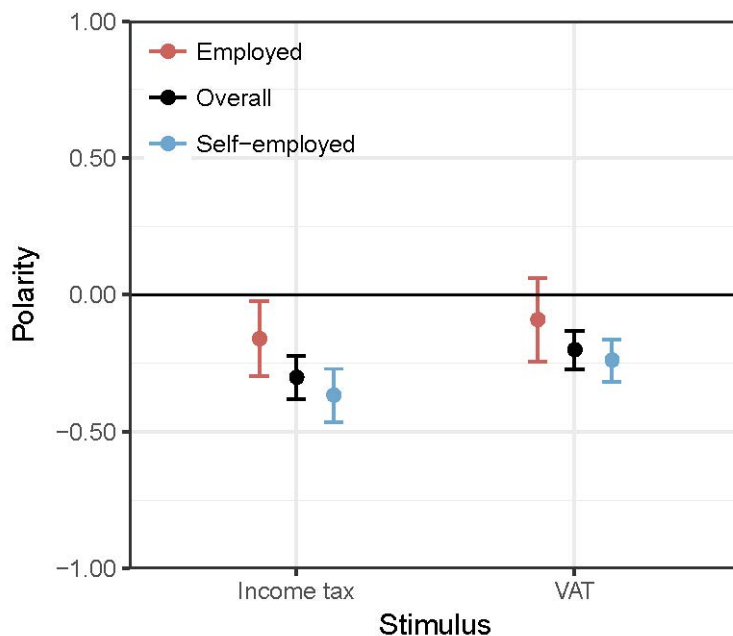


Figure 1: Mean polarity by stimulus and employment status. Error bars represent 95% confidence intervals (CI) of the means.

In order to test for differences in the polarity and neutrality indices between the stimuli (*income tax* vs. *VAT*) and employment status (employed vs. self-employed), we conducted a MANOVA with two dependent variables (polarity and neutrality of the associations). The red and blue dots in Figures 1 and 2 depict mean polarity and neutrality by stimulus and employment status respectively (also see Table 2).

The multivariate results suggested significant differences between the two stimuli, $F(2, 484) = 10.66$, $p < .001$, $\eta_p^2 = .042$, as well as significant differences between the two employment groups, $F(2, 484) = 4.52$, $p = .011$, $\eta_p^2 = .018$. We did not observe an interaction effect, $F(2, 484) = 0.44$, $p = .644$, $\eta_p^2 = .002$.

The univariate results for the polarity index showed no significant differences between the two stimuli, $F(1, 485) = 2.79$, $p = .096$, $\eta_p^2 = .006$, suggesting that they were equally negative, contrary to H2. The two employment groups did differ significantly in their evaluations, $F(1, 485) = 8.93$, $p = .003$, $\eta_p^2 = .018$, which was in line with our prediction of more negative evaluations occurring among self-employed participants (H3). There was no interaction effect, $F(1, 485) = 0.25$, $p = .620$, $\eta_p^2 = .001$.

The univariate results for the neutrality index served exploratory purposes. In this case, there was a significant difference between the two stimuli, $F(1, 485) = 20.97$, $p < .001$, $\eta_p^2 = .041$. The share of neutral associations was higher for the stimulus *VAT*. No difference was observed between the two employment groups, $F(1, 485) = 0.12$, $p = .725$, $\eta_p^2 < .001$. Again, there was no significant interaction effect, $F(1, 485) = 0.79$, $p = .373$, $\eta_p^2 = .002$.

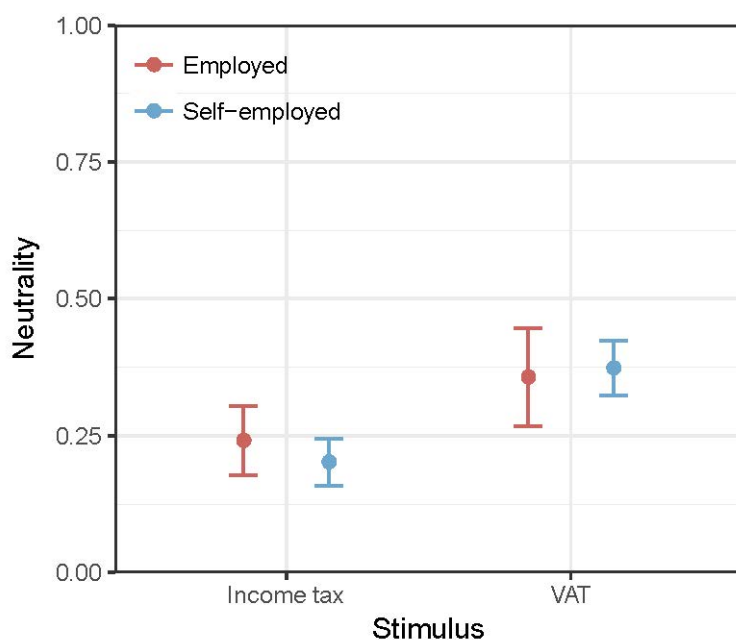


Figure 2: Mean neutrality by stimulus and employment status. Error bars represent 95% CI of the means.

In summary, as expected, both taxes were evaluated negatively overall, but we were unable to confirm a relative difference between *income tax* and *VAT* in terms of polarity of associations. However, we confirmed that self-employed participants generated a higher share of negative content in comparison to employed participants. Furthermore, our exploration revealed a lower share of neutral associations for *income tax* in comparison to *VAT*.

3.1.2 Exploration of the targeted sub-sample of self-employed taxpayers

We explored differences in polarity and neutrality for the three targeted branches of industry (see the first three columns of Table 2). For this explorative purpose, we calculated a 2 (*income tax* vs. *VAT*) by 3 (catering, crafts, vs. consulting) MANOVA, again with the polarity and neutrality indices as dependent variables. The tax stimulus was significant, $F(2, 237) = 9.38, p < .001, \eta_p^2 = .073$. However, there were no differences among the three branches, $F(4, 476) = 0.45, p = .772, \eta_p^2 = .004$, nor a significant interaction effect, $F(4, 476) = 1.52, p = .195, \eta_p^2 = .013$.

With regards to the significant effect of tax stimulus, the univariate analyses revealed that among the three targeted branches, *income tax* was evaluated more negatively than *VAT*, $F(1, 238) = 5.85, p = .016, \eta_p^2 = .024$. Additionally, *income tax* led to less neutral content than *VAT*, $F(1, 238) = 17.09, p < .001, \eta_p^2 = .067$, as already established in the main analyses.

In summary, our exploration did not reveal any differences in polarity or neutrality among the three targeted branches. However, within this sub-sample, we found a main effect of tax stimulus on polarity, indicating that more negative associations were observed for *income tax* than for *VAT*, which we did actually hypothesize for our overall sample.

3.2 SEMANTIC CONTENT OF SOCIAL REPRESENTATIONS

The content of the association was investigated after aggregating the qualitative information. For this purpose, each association was assigned to a set of a priori created categories by two independent raters who both had in-depth knowledge of the tax literature. Cohen's κ was used to determine the degree of agreement between the two raters. The resulting $\kappa = .54$ ($p < .001$) indicated moderate agreement between the raters (Landis & Koch, 1977). Subsequently, under nonparticipating observation of one of the authors, the two raters discussed all inconsistent category assignments until they reached full agreement. In a final step, very large categories were further divided into more specific sub-categories. The final categories are listed in Table 3 and further explained by illustrative terms.

Table 3: Absolute frequencies of associations assigned to each of the categories by stimulus.

Category	Examples	Stimulus	
		Income tax <i>N</i> = 985	VAT <i>N</i> = 946
Authorities and laws	tax authorities, §19	42	44
Complexity	many exceptions, complex	51	35
Criticism (state)	rip-off, non-transparent	78	64
Criticism (tax burden)	too high, expensive	135	34
Due date	15 th of the month, quarterly	30	46
Effort	bureaucracy, tedious	35	34
Emotions	headache, anger	22	5
Income and gain	money, wage, income	37	12
Inequity	unfair, not justified	32	5
Influence on prices	increases prices	4	27
Int'l comparison	different within EU	7	30
Justice	redistribution, fairness	21	10
Loss	burden, costs, payment	44	32
Miscellanea	various	45	68
National budget	public revenue	10	16
Necessity	necessary, tax liability	26	16
People and roles	self-employed, minister	20	11
Pre-payment	input tax, pre-registration	14	69
Progressivity	progression, scaled	54	3
Reform	tax reform, tax increase	20	23
Tax allowances	tax deductions, tax benefit	38	7
Tax consultant	tax accountant	27	8
Tax declaration	tax ID, tax assessment	93	88
Tax definitions	consumer tax, wage tax	40	49
Tax evasion	black labor, evasion	9	20
Tax rates	10%, 20%, 52%	20	116
Terminology	reverse charge, tax	18	24
Transitory item	senseless for B2B	0	46
Welfare	health system, solidarity	13	4

Note: the correspondence analysis additionally contained the variables *evaluation* (positive, neutral, & negative) and *employment status* (employed and self-employed), ultimately leading to a $29 \times 2 \times 2 \times 3$ table. To increase readability, only a reduced table was depicted here.

We ran a multiple correspondence analysis to reveal the underlying structure of the categories by stimulus, evaluation, and employment status. The two dimensions of the solution explained 41.8% (Dimension 1) and 37.8% (Dimension 2) of inertia. See Table 3 for a simplified representation of the initial frequency table and Figure 3 for a graphical representation of the rotated final solution. On the one hand, Dimension 1 differentiated negative content from positive and neutral contents. Dimension 2, on the other hand, differentiated between the two stimuli, with *income tax* on the upper end and *VAT* on the lower end.

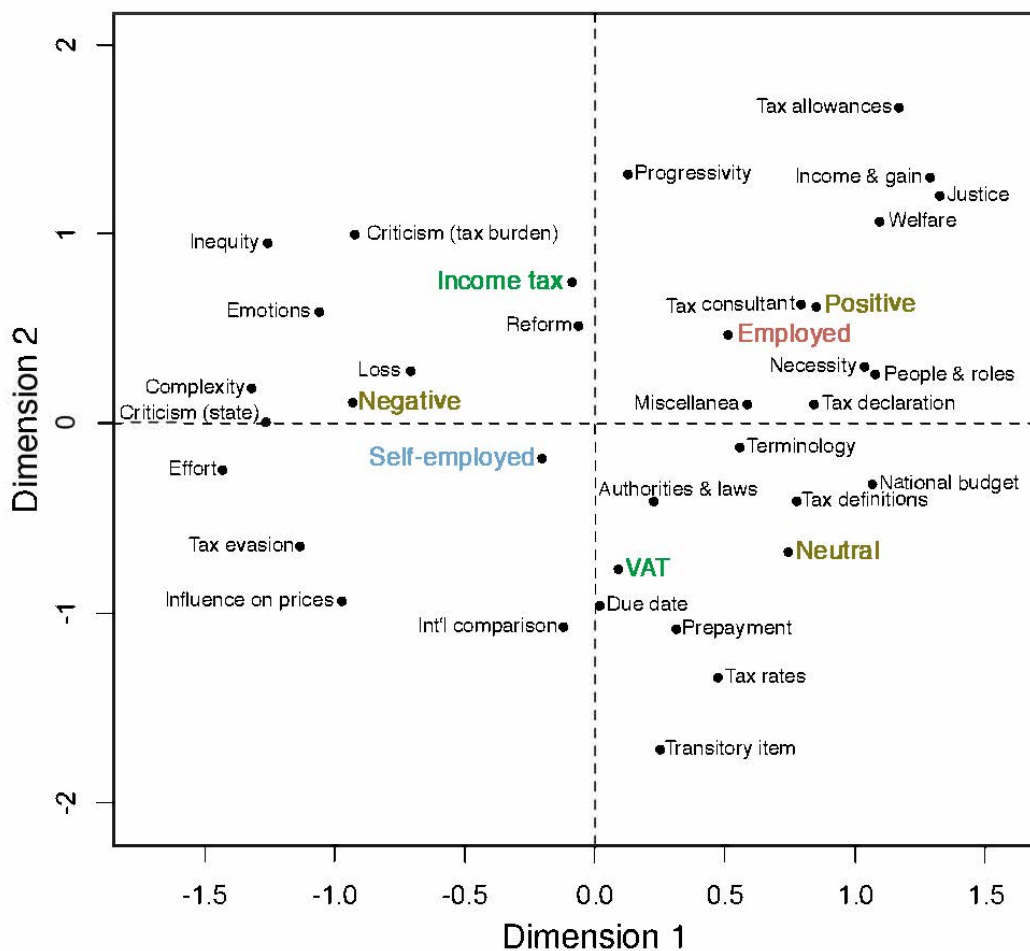


Figure 3: Plot of multiple correspondence analysis with category, employment status, tax stimulus, and evaluation.

The interpretation of a correspondence analysis is based on the position of content along the two dimensions (Greenacre, 1991) as well as the spatial distance between points of different nominal variables (Abdi & Valentin, 2007). The closer the two points, the more often these connections occur in the data. Again, we can observe the main results as established in the

analyses of polarity and neutrality. Employed taxpayers generated more positive content than self-employed participants. Furthermore, both taxes had a negative overall evaluation. At the same time, more neutral content was produced when participants were confronted with VAT than with *income tax*. Thus, *income tax* was positioned between negative and positive, and VAT between negative and neutral.

In addition to a confirmation of these established results, the correspondence analysis provided the opportunity to further explore the underlying content. *Income tax* was closest to the categories “reform”¹⁰, “criticism (tax burden),” and “progressivity.” The dimensional interpretation identified the categories “inequity,” “emotions,” and “criticism (tax burden)” as negatively linked to *income tax*, whereas “tax allowances,” “income and gain,” “justice,” and “welfare” were attributed as positive elements of the tax. Meanwhile, VAT was closest to the categories “pre-payment,” “due date,” and “authorities and laws,” which described formal processes and administrative tasks. Based on the dimensional interpretation, we further identified “tax evasion” and “influence on prices” as negatively associated with VAT, whereas “tax rates,” “transitory item,” and “tax definitions” comprised further neutral content.

Overall, the most negative categories were “complexity,” “criticism (state),” and “effort,” which were positioned around the mid-point of Dimension 2, indicating that these categories were relevant for both taxes. On the contrary, the most positive categories were “tax consultant,” “people and roles,” “necessity,” “welfare,” “income and gain,” and “justice,” which related to societal and individual levels. Employed taxpayers were positioned closely to these contents, whereas self-employed taxpayers were arranged closest to “authorities and laws” and “loss.”

3.3 EMOTIONS

In this section, emotional responses to the two stimuli by the two employment groups are reported. The full PANAS instrument measures 20 specific affects, of which ten are positive and ten negative. We computed one score for all 10 negative affects, which we regarded as the extent of negative emotions. The positive affects were omitted from the analyses¹¹.

We ran a 2 (stimulus) by 2 (employment status) ANOVA with the negative affect score as dependent variable. As hypothesized (H4), negative emotions were more pronounced when confronted with *income tax*, $M = 2.65$, 95% CI [2.49, 2.81], than with VAT, $M = 2.39$, 95% CI [2.22, 2.56], $F(1, 475) = 5.27$, $p = .022$, $\eta_p^2 = .011$, and also higher among self-employed, $M = 2.60$, 95% CI [2.46, 2.74], compared with employed participants, $M = 2.33$, 95% CI [2.14, 2.51], $F(1, 475) = 5.16$, $p = .024$, $\eta_p^2 = .011$. However, the observed effect sizes were rather small. We did not observe an interaction effect, $F(1, 475) = 0.17$, $p = .678$, $\eta_p^2 < .001$.

In summary, participants confronted with the stimulus *income tax* reported higher feelings of negative affect than in the case of VAT. Additionally, self-employed participants reported more pronounced negative emotional reactions than employed ones.

3.4 KNOWLEDGE

Seven items were used to measure knowledge about *income tax* and eight items for VAT, respectively. As we have no information regarding item difficulties, knowledge about the two

¹⁰ At the time of data collection, an income tax reform was being discussed intensively in the Austrian media.

¹¹ An exploration revealed little variance and no difference in positive emotional responses to the two stimuli nor between the two employment groups.

taxes cannot be compared against each other. Nevertheless, we can compare the knowledge of the two employment groups for each tax, to test our hypothesis that the self-employed have greater tax knowledge.

We conducted a MANOVA with employment status (employed vs. self-employed) as an independent variable and the two knowledge scores as dependent variables. The multivariate results indicated that knowledge differed between the two employment groups, $F(2, 486) = 13.18, p < .001, \eta_p^2 = .051$.

The univariate results confirmed that knowledge was higher for both types of taxes among self-employed participants compared with employed participants (H5), for *income tax* with $F(1, 487) = 16.40, p < .001, \eta_p^2 = .033$, employed $M = 4.69$, 95% CI [4.46, 4.91], self-employed $M = 5.24$, 95% CI [5.09, 5.38], and for *VAT* with $F(1, 487) = 16.08, p < .001, \eta_p^2 = .032$, employed $M = 6.38$, 95% CI [6.11, 6.61], self-employed $M = 6.89$, 95% CI [6.77, 7.01]. The observed effects met the expected effect assumptions.

Our findings clearly indicate that self-employed taxpayers had more knowledge about both taxes than employed ones.

3.5 SELF-EMPLOYMENT AND FURTHER CONSTRUCTS

Among the group of self-employed taxpayers, we assessed a number of business characteristics, psychological constructs referring to the business environment and perceptions of taxes, and socio-demographic information. Table 4 displays the intercorrelations among these variables as well as with the polarity and neutrality indices. We do not distinguish between the two stimuli groups.

With regard to polarity, more positive personal attitudes toward taxes in general were related to more positive associations, $r = .28, p < .001$. Furthermore, self-employed participants who indicated being politically more right-leaning generated more negative content, $r_s = -.20, p < .001$. Mental accounting, the tendency to keep track of financial activities by separating these into different mental accounts, was hypothesized to be associated with the polarity index, which could not be confirmed (H6), $r = .04, p = .491$. Looking at the correlations with the neutrality index, we observed that participants with lower incomes generated more neutral associations, $r_s = -.13, p = .019$. Furthermore, positive personal attitudes were linked to more neutral content, $r = .14, p = .007$. Increased experience with taxes was associated with less neutral associations, $r_s = -.11, p = .041$. The relationship with political orientation indicated more neutral content of left-leaning taxpayers, $r_s = -.17, p = .002$. However, the correlations with the neutrality index were all rather small.

The following intercorrelations were noteworthy. Older, self-employed participants generally had more positive attitudes toward taxes, $r = .17, p = .001$. Additionally, positive attitudes were linked to left-leaning political attitudes, $r_s = -.22, p < .001$ and to higher mental accounting scores, $r = .16, p = .003$. Mental accounting was also higher among participants who had more experience with paying taxes, $r_s = .15, p = .004$. Furthermore, experience was associated with slightly higher attitude levels, $r_s = .12, p = .025$.

Table 4: Intercorrelations of business-related variables as well as polarity and neutrality index.

	Descriptive	1	2	3	4	5	6	7	8	9	10	11	12
1. Polarity	$M = -0.30$ $SD = 0.59$												
2. Neutrality	$M = 0.29$ $SD = 0.32$	.29***											
3. Age	$M = 47.71$ $SD = 9.72$	.03	.02										
4. Sex	26% female 74% male	-.08	-.08	.06									
5. Income	$Mdn = 4.00$ $IQR = 4.00$	-.00	-.13*	.16**	.17**								
6. Education	$Mdn = 3.00$ $IQR = 2.00$	.05	.04	-.09	-.09	.27***							
7. Mental accounting	$M = 5.28$ $SD = 1.18$	.04	.02	.06	-.04	-.02	.01						
8. Attitudes taxes	$M = 4.87$ $SD = 1.13$	.28***	.14**	.17**	-.08	.05	-.01	.16**					
9. Experience taxes	$Mdn = 6.00$ $IQR = 2.00$	-.04	-.11*	.15**	.03	.17**	.05	.15**	.12*				
10. Tax consultant	86% yes 14% no	.08	.05	.09	-.05	-.01	.05	.05	.08	.12*			
11. Number employees	$Mdn = 3.00$ $IQR = 7.00$	-.05	-.05	.03	.11	.16**	-.24***	-.08	-.05	.10	-.17**		
12. Business years	$M = 14.95$ $SD = 9.61$	.01	-.07	.63***	.08	.13*	-.21***	.01	.05	.19**	-.02	.27***	
13. Political orientation	$Mdn = 5.00$ $IQR = 3.00$	-.20***	-.17**	.10	.23***	.09	-.07	.01	-.22***	.06	.04	.13*	.14*

Note. $N_{max} = 349$. Depending on the level of measurement and distribution of each variable, we applied Pearson r , point-biserial r_b , Spearman r_s , or rank-biserial r_{rb} for the correlations. Sex was coded with 1 = *female* and 2 = *male*. Hiring a tax consultant was coded with 1 = *Yes* and 2 = *No*. Experience with taxes was measured on a 7-point scale ranging from 1 = *low* to 7 = *high*. Political orientation was assessed by applying a 10-point scale ranging from 1 = *left* to 10 = *right*. See <http://osf.io/phnm5> for the translated questionnaire. * $p < .05$. ** $p < .01$. *** $p < .001$.

We also separately investigated the stimulus-related correlations (i.e., correlations with polarity and neutrality) for the two between-subject groups. One key difference was found in the relationship between political orientation and the two indices. In the case of *income tax*, politically left-leaning participants generated more positive, $r_s = -.28, p < .001$ and more neutral associations, $r_s = -.27, p < .001$, which were already established as general effects. However, we could not observe this association in the case of *VAT*, $r_s = -.11, p = .143$ for polarity, and $r_s = -.08, p = .306$ for neutrality. Note that this effect was not driven by differences in political orientation between the two stimuli groups, which did not differ with regards to the means, $t(335) = -0.58, p = .564$, nor the variances as revealed in a Levene test, $F(1, 335) = 0.51, p = .476$. Furthermore, self-reported attitudes toward taxes in general were related to more neutral associations in the case of *income tax* only, with $r = .19, p = .013$, whereas this relationship was not observed for *VAT*, $r = .11, p = .161$. Finally, having more experience with taxes corresponded with less neutral content when associating about *VAT*, $r_s = -.21, p = .004$, but not in the case of *income tax*, $r_s = -.02, p = .851$.

In summary, we could observe more positive content among participants with generally positive attitudes toward taxes, and more negative content among those who self-reported a right political orientation, especially in the case of *income tax*. Participants with lower income levels, lower experience with taxes, and left-leaning political views, and female individuals, generated more neutral terms. The relationships of political orientation and attitudes with the neutrality index were only present for the stimulus *income tax*, whereas that between experience and neutrality was only observable in the case of *VAT*.

4. DISCUSSION

The main goal of the present study was to compare the social representations of income tax with those of VAT, thereby addressing the shortcoming in the psychological tax literature to almost exclusively focus on income tax research. In this comparison, we also addressed differences between employed and self-employed taxpayers. Our confirmatory findings suggest that income tax and VAT are both perceived negatively overall (H1), whereas the evaluations do not differ significantly from each other in the overall sample (H2). As a main effect of employment, we could confirm that self-employed participants regard taxes more negatively (H3), express more negative emotional reactions to tax stimuli (H4), and have greater knowledge about the respective taxes (H5).

While we could not confirm our hypothesis regarding general difference in polarity between the two types of taxes (H2), we find more negative associations for income tax than for VAT in our exploration of the three targeted subgroups of self-employed taxpayers. Given that the interaction effect on polarity is not significant in the first confirmatory MANOVA (see 3.1.1), we suspect that differences in evaluation of the different taxes could be branch-specific.

With regard to the content of the social representations, income tax is especially criticized for being too high. On the one hand, perceptions of inequity, taxes as a financial loss, negative emotions, and progressivity constitute further close constructs. On the other hand, VAT is most systematically linked to mentioning the tax rates and terms describing administrative tasks. Furthermore, negative content associated with VAT is related to tax evasion and influences on sales prices. Considering that, on the overall level, both taxes are evaluated as equally negative in terms of statistical significance, it seems that different motives drive this evaluation: monetary and system characteristics in the case of income tax, and administrative work and higher prices in the case of VAT.

These identified differences between the taxes and employment groups could influence compliance decisions. Future compliance studies on the individual level should thus address both direct and indirect taxes, as the decision to evade one of the taxes is usually associated with evading the other in the case of self-employed taxpayers. Moreover, the interaction between suppliers and consumers requires further investigation as their interaction at the point of sale can lead to collaborative tax evasion, wherein the consumer pays a lower price by evading VAT and the supplier evades the incidental income tax. Based on the results, suppliers would agree to collude in order to reduce their monetary income tax and administrative VAT burdens. In this case, consumers would benefit from paying lower prices.

Despite these tax-specific contents, some similarities exist between the two taxes. Namely, three negative categories stand out for both taxes, particularly among self-employed taxpayers: complexity, effort, and criticism of the state. In our view, complexity perceptions and effort express compliance costs for businesses that are clearly seen in a negative light. Studies in the field emphasize that compliance costs constitute a significant issue for businesses (e.g., Cuccia & Carnes, 2001; Lignier, Evans, & Tran-Nam, 2014), and that a reduction of complexity could be a solution (e.g., James & Edwards, 2008; Slemrod & Venkatesh, 2002).

Prior findings suggested that differences in mental accounting affect taxpayers' income tax compliance (Muehlbacher, Hartl, & Kirchler, 2015) and their perception of VAT (Webley & Ashby, 2010). Our findings could not confirm any relationship between mental accounting and the polarity nor neutrality of the tax stimuli (H6), but found small positive correlations with general attitudes and experience with taxes.

One key strength of the study is constituted by the large sample size and the associated statistical power. Hence, even small effects could be detected. In the context of taxes, effects of this size have practical impacts, as even small increases in tax compliance considerably influence the total tax revenue. Another strength is reflected by the between-subject design in investigating differences and similarities among multiple stimuli. In this way, we can rule out order effects as drivers of the responses, as could be the case in a within-subject study.

Our study also has some limitations. First, we do not know the extent to which the sub-samples are representative of their respective populations. Furthermore, we do not have information about whether the non-responses are a consequence of active nonresponse (i.e., people do not want to provide answers; Rogelberg et al., 2003) or merely of the contextual fact that self-employed taxpayers may have busy work routines and cannot find the time to fill in a questionnaire.

As a conclusion, we encourage authorities and educational institutions - especially vocational schools for young business owners - to communicate the public and personal benefits of an effective tax system, as the evaluations of both taxes are more often negative than positive. Furthermore, one challenge that should be addressed is the high burden associated with the administration of VAT for self-employed taxpayers.

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Readers are encouraged to visit <http://osf.io/phmm5> to download the questionnaire and data file.

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