

Abstract

We investigated the interactive roles of procedural justice of the tax authority, trust in the tax authority, and identification with the nation in predicting voluntary tax compliance. Drawing from fairness heuristic theory and relational models of justice, we predicted that the relationship between procedural justice and voluntary tax compliance that has been found particularly among citizens with low (vs. high) trust in the tax authorities is restricted to citizens who weakly (vs. strongly) identify with the nation. The results of a field study with samples of Ethiopian and US taxpayers as respondents largely support our predictions. This research integrates the role of important and well-studied social psychological factors that shape voluntary tax compliance and reveals support for the hypothesis in a developing (i.e., Ethiopia) and a developed (i.e., US) nation – nations with strongly divergent tax climates.

Keywords: procedural justice, cognition-based trust, identification with the nation, voluntary tax compliance

PsycINFO classification code: 3040

JEL classification code: H26

1. Introduction

Tax revenue constitutes the lion's share of funds governments use to finance public expenditure. For tax revenue to yield the maximum possible benefit to the public, it must be collected in an efficient way – spending as little of the tax revenue as possible in collection costs (Bird & Zolt, 2008; Serra, 2003; Slemrod, 1990). In order for tax collection to be efficient, authorities need to secure taxpayers' voluntary compliance with tax laws (Alm, Kirchler, & Muehlbacher, 2012). Securing voluntary tax compliance is much more efficient than relying on enforced compliance (i.e., threatening citizens with punishment upon tax non-compliance), as this latter option is very costly, if it can be achieved at all (Alm, Kirchler, Muehlbacher, Gangl, Hofmann, Kogler, & Pollai, 2012; Kirchler, Hoelzl, & Wahl, 2008). One of the most important tools that tax authorities have at their disposal to promote voluntary tax compliance is to ensure that citizens perceive decision-making procedures related to tax collection as fair (Farrar, 2015; Hartner, Rechberger, Kirchler, & Schabmann, 2008; Murphy & Tyler, 2008).

Unfortunately, our understanding of when and why such fairness perceptions (i.e., the procedural justice of tax authorities) promote voluntary tax compliance is severely limited for three reasons. First, prior work addressing this relationship has not always revealed consistent results. Some studies revealed that high procedural justice promotes voluntary tax compliance (e.g., Alm, Jackson, & McKee, 1993; Farrar, 2015; Murphy, 2004; Murphy & Tyler, 2008); yet other studies did not reveal such an effect (e.g., Porcano, 1988; Worsham, 1996) or found it on some indices of tax compliance but not on others (Wenzel, 2002). Second, our understanding of the processes that may explain the positive effect of procedural justice on voluntary tax compliance is incomplete. Some scholars focused on the role of taxpayers' trust in the tax authority in this process, noting that high procedural justice communicates the information that

authorities can be trusted not to abuse their power, which makes citizens more willing to contribute to the collective by voluntarily paying their taxes (Murphy, 2004; van Dijke & Verboon, 2010).

Yet other researchers linked the effect of procedural justice on voluntary (tax) compliance with citizens' identification with the nation (e.g., Hartner-Tiefenthaler, Rechberger, & Kirchler, 2013; Hartner, Kirchler, Poschalko, & Rechberger, 2010; Wenzel, 2002). Unfortunately, it is as yet unclear how trust and identification processes may relate to one another to explain the relationship between procedural justice and voluntary tax compliance.

Third, virtually all studies so far on the relationship between procedural justice and tax compliance have been conducted in developed nations in Europe, Australia, and the US (see Gobena & van Dijke, 2016 for an exception). This reflects the more general trend in the tax compliance literature that almost all research addressing antecedents of tax compliance has been conducted in developed nations (see Doyle, Gallery, Coyle, & Commissioners, 2009; Palil, 2010, for reviews; for exceptions, see Abdul-Razak & Adafula, 2013; Smulders & Naidoo, 2013). This is problematic because the tax environment in developing countries differs strongly from that in developed countries. For instance, in contrast to the situation in developed countries, in developing countries taxpayers and tax authorities often show less mutual understanding. Tax authorities in these countries tend to be less sympathetic of taxpayers' difficulties; taxpayers on their part feel persecuted by those authorities and are more likely to evade taxes when they see an opportunity to do so (Fjeldstad, 2001; Gangl, Hofmann, & Kirchler, 2015).

In the present paper, we address these three limitations to our understanding of the relationship between the procedural justice of the tax authority and citizens' voluntary tax compliance. Specifically, to understand when procedural justice may predict voluntary tax compliance and when this will not be the case, we take a moderator approach and thus focus on

identifying critical boundary conditions to this effect (Vancouver & Carlson, 2015). As moderator variables, we simultaneously consider trust in the tax authority and identification with the nation. Integrating arguments from fairness heuristic theory (Lind, 2001) and relational models of procedural justice (Blader & Tyler, 2015), we argue that the relationship between procedural justice and voluntary tax compliance is most pronounced among citizens with low (vs. high) trust in the tax authorities who at the same time weakly (vs. strongly) identify with their nation.

We test this proposed three-way interaction effect of procedural justice, trust in the tax authority, and identification with the nation on voluntary tax compliance among taxpayers in a developing country (Ethiopia) and in a developed country (the US). The tax environment in Ethiopia constitutes a typical “cops and robbers” type of climate, whereby the tax authority holds the belief that all taxpayers strive to evade taxes whenever situations allow them and taxpayers reciprocate by hiding their genuine income and taxable transactions from tax officials (Bekana, Gobena, & Yibrah, 2014; Debere, 2014; Gobena & van Dijke, 2016; Yesegat & Fjeldstad, 2016). The tax environment in the US is a more advanced setting in which the interaction between the tax authority and the taxpayers is undeniably smoother than that in developing countries (Alm, 2012; Alm et al., 1993; Alm, McClelland, & Schulze, 1999). Though we do not claim that Ethiopia and the US are representatives, respectively, of developing and developed economies, they are examples of such economies, and finding support for our prediction in both of these distinct tax environments arguably boosts the ecological validity of our conclusions. Evidence of the countries' distinct taxation climates is found in the size of the shadow economy as a percentage of GDP, which is cited as a proxy for citizens' tax morale (Torgler & Schneider, 2007). This percentage averages 45% for developing countries and was estimated at 35.1% for Ethiopia in 2007; it averages 19% for member countries of the Organization for Economic Co-

operation and Development (OECD) (Schneider & Enste, 2013) and was estimated at 8.4% for the US in 2015 (Schneider, 2015).

2. Related Literature and Hypothesis

2.1 Procedural Justice and Voluntary Tax Compliance

Procedural justice refers to the perceived fairness of the decision-making procedures that authorities follow to arrive at resource allocation decisions (Leventhal, 1980). It is shaped by a multitude of factors, such as the consistent application of procedures over time and across all affected, the use of accurate information for decision-making, decisions being free from decision-makers' self-interest, and allowing those affected to voice their opinion in the authority's decisions (Colquitt, 2001; Leventhal, 1980; Thibaut & Walker, 1975; Walker, 1989). Procedural justice leads to positive attitudes and cooperative responses among members of social collectives in a variety of settings, such as law enforcement (Barkworth & Murphy, 2015), work relations (e.g., Masterson, Lewis, Goldman, & Taylor, 2000), and educational settings (e.g., Ereş, Gülcan, & Çelik, 2014). As noted, procedural justice has also been shown to predict voluntary compliance with tax laws (Farrar, 2015; Hartner et al., 2008; Murphy & Tyler, 2008), although this relationship has not always been found (e.g., Porcano, 1988; Wenzel, 2002; Worsham, 1996).

An influential theory that explains why procedural justice promotes voluntary tax compliance is fairness heuristic theory (Lind, 2001). This theory notes that investing in a collective (such as by voluntarily paying one's taxes) confers a sense of identity and belonging, along with opportunities for improved outcomes (e.g., a better functioning country) but also possible exploitation when authorities abuse or reject citizens. Individuals respond positively (e.g., with elevated tax compliance) to high procedural justice because it informs them that

authorities can be trusted not to abuse their power (Lind, 2001; van Dijk, Parks, & van Lange, 2013). Trust is defined as the “willingness to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party” (Mayer, Davis, & Schoorman, 1995, p. 712).

Prior studies have tested predictions derived from fairness heuristic theory in the area of tax compliance. Gobena and van Dijke (2016) predicted and found that the relationship between procedural justice and tax compliance should be pronounced particularly when the tax authority is perceived as having high (rather than low) coercive power or low (rather than high) legitimate power because the possibility of exploitation should be particularly salient in these situations. Moreover, they also found that the relationship between procedural justice and tax compliance, as moderated by legitimate power, was mediated by trust in the authority, thus suggesting that procedural justice is considered informative of the tax authority's trustworthiness (see also, e.g., Murphy, 2004; Yang, Mossholder, & Peng, 2009, for other research showing that the relationship between procedural justice and cooperative responses is mediated by trust in the authority). Other work provided evidence for fairness heuristic theory by zooming in on the role of trust in the authority as a *moderator* of the effect of procedural justice on tax compliance. Van Dijke and Verboon (2010) showed that citizens with low (vs. high) trust in the tax authority – and who thus particularly fear exploitation by the authority – respond more strongly with tax compliance to procedural justice information (see also De Cremer & Tyler, 2007; van den Bos, Wilke, & Lind, 1998, for other work that considered trust as a moderator of procedural justice effects).

The effects of procedural justice on compliance with authorities have also been explained

in terms of identification with the nation. Identification with the nation is defined as the “belief in a shared culture, history, traditions, symbols, kinship, language, religion, territory, founding moments, and destiny” (Guibernau, 2004, p. 134). Identification with the nation stimulates commitment to the welfare of the nation through internalization of the collective benefits (Wenzel & Jobling, 2006), and this enhances voluntary cooperation (van Dijk, De Cremer, & Handgraaf, 2004; Huddy & Khatib, 2007; Schatz & Lavine, 2007), including payment of one’s taxes as they come due (Wenzel, 2007). The group-value model (Lind & Tyler, 1988) and the relational model of cooperation (Tyler & Blader, 2003) assert that people consider fair decision-making by authorities representing the collective as identity information; being treated fairly tells people that they are respected members, whereas unfair treatment tells them that they are less valued, less respected members (Tyler, 1989; Tyler & Blader, 2000).

In support of these models, some studies show that the identity information that is communicated by decision-making procedures is most impactful among group members caring most about the group. For instance, people who are strongly committed to an organization react more strongly to perceived fairness than less committed organization members (Brockner, Tyler, & Cooper-Schneider, 1992). Moreover, the support for procedurally fair, rather than unfair, authorities is more pronounced among people who strongly identify with the relevant collective (Tyler, Degoey, & Smith, 1996; Tyler & Degoey, 1995), and the effect of procedural justice on self-perceived respect is restricted to people who identify strongly with the relevant collective (van Dijke & De Cremer, 2008). Within the tax compliance literature, procedural justice has also been shown to be particularly effective in promoting tax compliance among citizens who strongly identify with their country (Wenzel, 2002).

2.2 Integrating the Roles of Trust and Identification

As noted, the extant literature documents trust as both a mediator (e.g., [Murphy, 2004](#); [Yang, Mossholder, & Peng, 2009](#)) and a moderator (e.g., [De Cremer & Tyler, 2007](#); [van Dijke & Verboon, 2010](#)) of the relationship between procedural justice and cooperative responses such as voluntary compliance with authorities. The present research extends work that has viewed trust as a moderator of procedural justice effects on cooperative responses. From the perspective of fairness heuristic theory, trust is relevant to consider as a moderator of procedural justice effects, as low trust in an authority implies fear of exploitation. This makes individuals focus more strongly on procedural justice (as an indicator of authority integrity), consequentially making procedural justice effects stronger ([van Dijke & Verboon, 2010](#)). In the present paper we argue that this Procedural Justice \times Trust interaction on voluntary tax compliance is further moderated by citizens' level of identification with the nation. Specifically, we argue that the fear of being taken advantage of (as implied by low trust) may be less relevant to individuals who identify strongly with the collective. We expect this because such individuals have internalized collective goals and want to support the collective, irrespective of the costs to themselves and their personal gains ([De Cremer, 2005](#); [van Lange, 1999](#)). Among citizens who strongly identify with the nation, low trust should be less likely to strengthen the effect of procedural justice on voluntary compliance, as high identifiers care less about their own interests ([De Cremer, 2005](#); [Hegtvedt, Ganem, Waldron, & Brody, 2009](#); [Frey & Meier, 2004](#)). These arguments culminate in our hypothesis:

Identification with the nation moderates the interaction effect of procedural justice of the tax authorities and trust in these authorities on voluntary tax compliance, such that procedural justice is positively related with voluntary tax compliance primarily when trust is low (vs. high)

and, simultaneously, identification is low (vs. high).

3. Study Overview

As noted, we tested our hypothesis in a sample of Ethiopian working professionals and a sample of US working professionals. We conducted a cross-sectional survey in which we measured our predictor variables – procedural justice, trust, and identification with the nation – as well as the criterion variable – voluntary tax compliance – at a single point in time. To establish the discriminant validity of our findings, we also included enforced tax compliance as a criterion variable (in addition to voluntary tax compliance). We did this because procedural justice and trust both overlap somewhat with the perceived competence of the tax authority in collecting taxes (e.g., by increasing perceived detection probability; see [Gangl et al., 2015](#); [Gangl, Hofmann, Pollai, & Kirchler, 2012](#); [Kirchler et al., 2008](#); [Weiner, Graham, & Reyna, 1997](#)). Perceptions of competence can be associated with higher levels of enforced tax compliance ([Devos, 2014](#); [Hartl, Hofmann, Gangl, Hartner-Tiefenthaler, & Kirchler, 2015](#); [Hofmann, Gangl, Kirchler, & Stark, 2014](#)). However, our argument about the role of identification with the nation in moderating the Procedural Justice \times Trust interaction assumes that identification makes individuals voluntarily contribute to the collective, regardless of the cost for themselves. Therefore, finding that the hypothesized three-way interaction between procedural justice, trust in the tax authority, and identification predicts voluntary, rather than enforced, tax compliance will boost our confidence in the conclusions that we draw.

4. Method

4.1 Respondents and procedure

We determined the appropriate size of our samples with power analysis using the G*Power ([Faul, Erdfelder, Buchner, & Lang, 2009](#)). Power analysis is used to calculate the minimum

sample size required so that one is reasonably likely to detect an effect of a given size (Abraham & Russell, 2008). Interaction effects are usually small in size in survey designs (in terms of Cohen's (1988) rules of thumb, $f^2 = .03-.04$; Aguinis, Beaty, Boik, & Pierce, 2005; Shieh, 2010). With a desired power of .80 (i.e., an 80% probability of detecting a true effect with effect size of .035), $\beta = .20$, and $\alpha = .05$ (i.e., a 5% chance of incorrectly concluding an effect exists in the population when it does not), power analysis yielded a minimum sample size of 179. Our sample sizes ($N = 217$ for the Ethiopian sample and $N = 200$ for the US) are thus appropriate to draw reliable conclusions.

In the Ethiopian Civil Service University, Tilburg University, and Erasmus University, with which we are affiliated, a researcher is not required to obtain ethics approval for data collection using surveys for which responding is highly unlikely to affect the psychological or physical well-being of respondents. Furthermore, filling in our survey was based on voluntary participation, indicated in a letter accompanying the questionnaire (Ethiopian sample) or communicated in the recruitment message (US sample), and hence we did not seek ethics approval.

The first sample consisted of 217 working professionals (i.e., taxpayers who were engaged primarily in business consulting activities with accounting, economics, management, and engineering backgrounds; some engaged in tertiary-level teaching; and only a few with a lower level of academics working as clerks and secretaries) in the Ethiopian capital, Addis Ababa. We administered a questionnaire prepared in English. Of the respondents, 83.6% were male, 14.2% were female, and 2.2% did not indicate their gender. Respondents were between 20 and 60 years of age ($M_{\text{age}} = 36.3$, $SD_{\text{age}} = 8.04$). With regard to the highest level of education, 0.5% had completed elementary education only, 4.1% had a 2-year college diploma, 20.1% had a bachelor's degree,

60.3% had completed a master's degree, 11.9% had completed a PhD, and 3.1% did not indicate their highest level of education. With respect to their annual earnings, 7.1% of the respondents reported that they had annual earnings of 20,000–40,000 Ethiopian Birr (1 Birr = approximately USD .05), 11.8% had earned 40,000–60,000 Birr, 16.6% had earned 60,000–80,000 Birr, 29.9% had earned 80,000–100,000 Birr, 10.9% had earned 100,000–120,000 Birr, and 23.7% had earned more than 120,000 Birr. Among the respondents, 3.3% reported that they had less than 2 years of experience with the tax authority, 12.6% had 2–6 years, 25.1% had 6–10 years, 36.7% had 10–20 years, and 22.3% had more than 20 years of experience. In terms of ethnicity, 32% of the respondents described themselves as Oromo, 21.9% as Amhara, 14.2% as Tigray, 5.9% as Gurage, 10.5% as “other,” and 15.5% did not report their ethnic background. The ethnic composition of the Ethiopian respondents within the total number of respondents in this sample roughly mirrors the ethnic groups' composition in the Ethiopian population; that is, 34.4% Oromos, 27% Amharas, 6.1% Tgrians, 2.5% Gurage, and 30% other. The “other” 30% comprises the remaining 76 ethnic groups. We coded income range of respondents as 1 = 20,000–40,000 Birr, 2 = 40,000–60,000 Birr, 3 = 60,000–80,000 Birr, 4 = 80,000–100,00 Birr, 5 = 100,000–120,000 Birr, and 6 = more than 120,000 Birr; years of experience with the tax authority as 1 = less than 2 years, 2 = 2–6 years, 3 = 6–10 years, 4 = 10–20 years, and 5 = more than 20 years; highest level of education attained as 1 = completed elementary school, 2 = completed high school, 3 = completed college diploma, 4 = completed first degree, 5 = completed master's degree, and 6 = completed a PhD; ethnicity as 1 = Amhara, 2 = Tigray, 3 = Oromo, 4 = Gurage, and 5 = Other.

For the Ethiopian sample, we used a printed questionnaire to collect the data. We collected the data over a period of three months, February–April, 2015. We distributed a total of 300 questionnaires to working professionals. Accompanying the questionnaire was a cover letter and a

pre-paid reply envelope for enclosure of the filled-out questionnaire. The cover letter explained the intent of the study and guaranteed strict confidentiality of responses. Two hundred and twenty-three questionnaires were returned (a response rate of 74%). Of these, six respondents skipped a significant number of questions and were therefore removed from the dataset. Accordingly, a total of 217 usable questionnaires were included in the analysis.

The US sample consisted of 200 US income taxpayers. Respondents were invited online to participate in the study. All respondents responded to all questions, and hence there were no dropouts or missing values. We introduced the study as being about “how and why people decide to voluntarily comply with taxation or evade it.” Of the 200 respondents, 56.5% were male and 43.5% were female. Respondents were between 19 and 75 years of age ($M_{age} = 37.90$, $SD_{age} = 12.34$). In terms of their highest level of education, 0.5% had completed elementary school only, 18% had a high school diploma, 19% had completed vocational education, 50% had a bachelor's degree, 10.5% had completed a master's degree, and 2% had completed a PhD. With respect to their annual earnings, 20.3% of the respondents reported having annual earnings less than 20,000 USD, 41.8% had earned 20,000–40,000 USD, 15.9% had earned 40,000–60,000 USD, 13% had earned 60,000–80,000 USD, 5.6% had earned 80,000–100,000 USD, and 3.4% had earned more than 100,000 USD. Among the respondents, 4% reported that they had less than 2 years of experience with the tax authority, 17.5% had 2–6 years, 13.5% had 6–10 years, 33% had 10–20 years, and 32% had more than 20 years of experience. Regarding ethnic background, 79.5% of respondents identified themselves as White/Caucasian, 3% as Hispanic American, 10% as African American, 5.5% as Asian American, 0.5% as Native American, and 1.5% as “other” than those listed. Like in the Ethiopian sample, we coded income range of respondents as 1 = less than 20,000 USD, 2 = 20,000-40,000 USD, 3 = 40,000-60,000 USD, 4 = 60,000-80,000 USD, 5 = 80,000-

100,00 USD, 6 = more than 100,000 USD; years of experience with the tax authority as 1 = less than 2 years, 2 = 2-6 years, 3 = 6-10 years, 4 = 10-20 years, and 5 = more than 20 years; highest level of education attained as 1 = completed elementary school, 2 = completed high school diploma, 3 = completed vocational education, 4 = completed bachelor's degree, 5 = completed master's, and 6 = completed a PhD; ethnicity as 1 = White/Caucasian, 2 = Hispanic American, 3 = African American, 4 = Asian American, and 5 = Native American, and 6 = Other.

For the US sample, we recruited participants via Amazon's Mechanical Turk (AMT) over a period of one week in May (13-21), 2015. AMT is an online community designed to bring researchers in contact with respondents who are willing to participate in research. AMT has become a popular platform for collecting data across the social sciences (Berinsky, Huber, & Lenz, 2012; Rand, Greene, & Nowak, 2012). For instance, studies have used AMT to address issues as diverse as generosity (Cryder, Loewenstein, & Scheines, 2013), cross-cultural variations in work outcomes (Uhlmann, Heaphy, Ashford, Zhu, & Sanchez-Burks, 2013), and procedural justice enactment (van Houwelingen, van Dijke, & De Cremer, 2014). Studies evaluating the validity of AMT have shown that the data obtained are reasonably reliable (Behrend, Sharek, & Meade, 2011; Buhrmester, Kwang, & Gosling, 2011; Paolacci & Chandler, 2014), while representativeness of such samples requires close scrutiny by recruiters (see Goodman & Paolacci, 2017). We return to this in the general discussion.

4.2 Measures

We used scales developed for developed countries to collect data in a developed (i.e., the US) and a developing country (i.e., Ethiopia). We did this because the scales are not specific to the context of developed countries; they have been utilized across cultures before; and most importantly, this makes comparison of results for developing and developed countries sensible.

We measured *procedural justice* with a 7-item scale¹ developed and validated by Colquitt (2001). We used this scale rather than scales that have been used before in the tax compliance literature because these scales include items that do not refer to aspects of decision-making procedures, and they overlap with other constructs. For instance, Murphy's (2004) measure of procedural justice of the tax authority contains items that measure trust. An example item that overlaps with trust is "The tax office treats people as if they can be trusted to do the right thing." The Colquitt (2001) measure, on the other hand, is solely based on Leventhal's (1980) and Thibaut & Walker's (1975) concept of procedural justice and measures the most common procedural justice criteria: voice, bias suppression, accuracy, consistency, and norm adherence. Therefore, we argue that this measure is an improvement over existing procedural justice measures in the tax compliance literature. We slightly adapted the Colquitt (2001) items to fit the context of procedural justice of the tax authority. Item examples (preceded by the stem "The following items refer to the procedures used to arrive at tax-related decisions.") are "I have been able to express my views and feelings during those procedures" and "Those procedures have been free of bias" (*1 = strongly disagree, 7 = strongly agree*). We averaged these items into a procedural justice scale. The complete adapted scale is found in Appendix A.

Following Gobena and van Dijke (2016; see also Gangl et al., 2015; Gangl et al., 2012), we measured *trust* with the 6-item cognition-based trust scale developed by McAllister (1995). We used this scale rather than other scales that have been used before in the tax compliance literature because these scales include items that overlap with items of procedural justice of the tax authority. Murphy's (2004) measure of institutional trust in the tax authority, for instance, contains items that measure the fairness of the tax authority's decision-making procedures. We slightly adapted the McAllister (1995) items to fit the context of cognition-based trust in the tax authority. Item

examples are “The tax officials approach their job with professionalism and dedication” and “Given these officials’ track record, I see no reason to doubt their competence and preparation for their job” ($1 = \textit{strongly disagree}$, $7 = \textit{strongly agree}$). We averaged the items into one scale. The complete scale is found in Appendix A of [Gobena and van Dijke \(2016\)](#).

We measured *voluntary tax compliance* with a 10-item scale from [Gobena and van Dijke \(2016\)](#) adapted from [Kirchler and Wahl \(2010\)](#). Item examples (preceded by the stem “When I pay my taxes as required by the [Ethiopian/US] tax laws and regulations, I do so...”) are “...because I pay my taxes voluntarily” and “...without spending a long time thinking how I could reduce them” ($1 = \textit{strongly disagree}$, $7 = \textit{strongly agree}$). We averaged the items to create a voluntary compliance index. The complete scale is found in Appendix A of [Gobena and van Dijke \(2016\)](#).

We measured *enforced tax compliance* with an 8-item scale from [Gobena and van Dijke \(2016\)](#) adapted from [Kirchler and Wahl \(2010\)](#). Item examples (preceded by the stem “When I pay my taxes as required by the [Ethiopian/US] tax laws and regulations, I do so...”) are “...because I feel forced to pay my taxes” and “...because a great many tax audits are carried out” ($1 = \textit{strongly disagree}$, $7 = \textit{strongly agree}$). We averaged the items to create an enforced tax compliance index. The complete scale is found in Appendix A of [Gobena and van Dijke \(2016\)](#).

We measured *identification with the nation* with a 10-item scale from [Tyler and Blader \(2001\)](#). We slightly adapted the items to fit the current context. Item examples are “My nation is important to the way I think of myself as a person” and “When someone praises the accomplishments of my nation, it feels like a personal compliment to me” ($1 = \textit{strongly disagree}$, $7 = \textit{strongly agree}$). We averaged the items to create an identification index. The complete scale is found in Appendix A.

5. Results

5.1 Descriptive Statistics and Correlations

Table 1 and Table 2 present means, standard deviations, Cronbach alpha coefficients, and correlations between the variables in the Ethiopian and US samples, respectively.

Insert Tables 1 & 2 about here

As can be seen in Table 1 and 2, in both samples, in line with prior work, all predictor variables, namely procedural justice (e.g., [van Dijke & Verboon, 2010](#); [Wenzel, 2002](#)), trust in the tax authority (e.g., [Gobena & van Dijke, 2016](#); [Scholz & Lubell, 1998](#); [van Dijke & Verboon, 2010](#)), and identification with the nation (e.g., [Wenzel, 2002](#)), had significant positive associations with voluntary tax compliance. Also in line with prior work, none of these variables were significantly associated with enforced tax compliance ([Gobena & van Dijke, 2016](#)), apart from trust in the US sample. This latter correlation is, in fact, in line with the slippery slope framework of tax compliance ([Kirchler et al., 2008](#)), which assumes that trust in and power of the tax authority are critical dimensions in understanding tax compliance. Specifically, while power of the tax authority elicits enforced compliance, trust in the authority leads to voluntary compliance (see [Kirchler, 2007](#)). The framework argues that if taxpayers' perception of the potential of tax officials to detect and punish tax evasions is interpreted as coercive (vs. legitimate) power, the level of enforced tax compliance increases, but the same interpretation damages trust in the tax authority. Consequently, trust in the tax authority and enforced tax compliance are argued to be negatively correlated.

Tables 1 and 2 also show that trust, procedural justice, and identification are intercorrelated (as they were in all prior field studies that included trust or identification as

moderator of procedural justice effects; e.g., see [De Cremer & Tyler, 2007](#); [van Dijke & Verboon, 2010](#) for procedural justice and trust correlation; [Wenzel, 2002](#); [De Cremer, 2005](#) for procedural justice and identification correlation). However, these correlations are clearly lower than the threshold (i.e., .8 or .9) where multicollinearity issues can arise in the analyses that we used to test our hypothesis, that is regression analyses (see [Mela, 2002](#); [Tu, Kellett, Clerehugh, & Gilthorpe, 2005](#)).

Tables 1 and 2 also show that the US sample scored higher than the Ethiopian sample on voluntary tax compliance (4.95 vs. 4.51; $t(199) = 3.52, p < .01$), procedural justice (3.71 vs. 2.95; $t(198) = -6.18, p < .01$), and trust (3.74 vs. 3.17; $t(198) = -4.53, p < .01$). The higher scores on these variables are in line with the difference in the tax environments between these countries, with the Ethiopian tax environment, as noted earlier, sometimes being referred to as a “cops and robbers” type (see [Bekana et al., 2014](#); [Gobena & van Dijke, 2016](#)). Identification was higher for the Ethiopian sample than the US sample (4.86 vs. 4.49; $t(198) = 2.50, p = .01$). This may reflect nationalism that has served to transcend political, social, economic, and cultural challenges in Ethiopia, which is argued to have resulted from Ethiopian nationalists' continual attempts to harness national cohesion against threats from both within and outside of Ethiopia (see [Gebrewold, 2009](#)).

5.2 Regression Analyses

Because our research question pertains to establishing boundary conditions to known effects, we used moderated regression ([Dawson & Richter, 2006](#); [Hayes & Matthes, 2009](#); [Rosnow & Rosenthal, 1995](#)). We used this approach (i.e., the three-way analysis) rather than other options (e.g., splitting the sample at the mean of various variables and ANOVA) that are clearly suboptimal as they lead to loss of a lot of information (see [Irwin & McClelland, 2003](#);

Royston, Altman, & Sauerbrei, 2006). Unlike the vast majority of studies in the tax compliance literature that used ordinary least squares (OLS) regression (e.g., Murphy, 2004; Murphy & Tyler, 2008; van Dijke & Verboon, 2010), we used linear regression with robust standard errors. Robust standard errors help overcome the limitations of OLS regression that it is very sensitive to the presence of outliers and that it can easily inflate the standard errors of the slope coefficients when the criterion variable contains measurement error (see Adedia, Adebajji, Okyere, & Agyen, 2016; Alma, 2011)².

Demographic variables did not significantly correlate with the predictor variables except business years with procedural justice and trust in the US sample. Therefore, we decided to not include them as controls in the regression analyses (Carlson & Wu, 2012).

Insert Table 3 about here

Table 3 presents the results of the regression analyses. As Table 3 shows, the R^2 of the regression result is higher in the US than in the Ethiopian sample for step 1 of the regression. This likely occurs because trust has stronger main effect in the US sample in step 1 (and subsequent steps, of course) than in the Ethiopian sample. This difference could be caused by the difference in the tax environments – specifically, the Ethiopian respondents evaluating their relationship with the tax authority as antagonistic, which leads to lowered value of trust in the tax authority (see Bekana et al., 2014; Gobena & van Dijke, 2016). However, for steps 2 and 3, R^2 changes are similar for both samples. Importantly, the interaction of theoretical interest that we focused on in this paper is comparable across the two samples.

In step 1, in both the Ethiopian and the US sample, identification predicted voluntary tax compliance significantly, while procedural justice did not. In this step, trust predicted voluntary tax compliance only in the US sample. In step 2, the same main effect patterns as in step 1 prevailed in both samples. Furthermore, in both samples, while the Procedural Justice \times Identification interaction predicted voluntary tax compliance, the Procedural Justice \times Trust interaction did not. The Trust \times Identification interaction predicted voluntary tax compliance in the US sample, but not in the Ethiopian sample in step 2. We note that the sign of the Procedural Justice \times Identification interaction was positive in the Ethiopian sample and negative in the US sample. Thus, in the Ethiopian sample, procedural justice is more strongly related to voluntary tax compliance among high (rather than low) identifiers; in the US sample, procedural justice is more strongly related to tax compliance among low (rather than high) identifiers.

This difference may result from the difference in the tax climates from which the respondents were drawn. As noted, the Ethiopian tax climate is a typical “cops and robbers” type whereby the tax authority and the taxpayers work against each other (see [Abdella & Clifford, 2010](#); [Gobena & van Dijke, 2016](#)). In such an environment, justice may make sense only among those who strongly identify with the nation; weakly identifying citizens may consider all authorities' decisions and procedures in a negative light ([Lipponen, Wisse, & Perälä, 2011](#); [Wenzel, 2002](#)). On the other hand, in the more cooperative environment of the “client and service” tax climate in the US, high identifiers may not be as concerned about the fairness of authorities as low identifiers because high identifiers perceive authorities' actions in a positive light regardless of their actions; low identifiers attend to procedural justice information to avoid abuse of power by the authorities (see [Huo, Smith, Tyler, & Lind, 1996](#)).

In step 3, the main effects of procedural justice, trust, and identification were similar to

those in step 2. Furthermore, the Procedural Justice \times Trust and Procedural Justice \times Identification interactions did not predict voluntary tax compliance in both samples, whereas the Trust \times Identification interaction continued to predict voluntary compliance only in the US sample. However, as predicted, the Procedural Justice \times Trust \times Identification interaction predicted voluntary tax compliance in both samples. Figure 1 visually presents the shape of this interaction for the Ethiopian sample; Figure 2 presents the shape of this interaction for the US sample.

Because the variables were each measured on a 7-point scale, we treated the data as continuous and applied parametric tests without using dummy variables. In creating the categories in Figures 1 and 2, we used the Excel facility provided by Dawson (2014) that automatically yields coefficients used in plotting the interaction graphs. For this plotting, the criterion was always 1 *SD* below/above the mean.

 Insert Figures 1 and 2 about here

We proceeded to test our hypothesis with simple slopes analyses (Aiken & West, 1991). Simple slopes analysis is a follow-up analysis that shows whether a specific effect (i.e., the Procedural Justice \times Trust interaction, and the main effect of procedural justice) is significantly different from zero as a function of the moderator value, something that moderated regression itself cannot tell (see Aiken & West, 1991; Dawson & Richter, 2006; Robinson, Tomek, & Schumacker, 2013). In support of our hypothesis, this analysis showed that the Procedural Justice \times Trust interaction significantly predicted voluntary tax compliance when identification was low (1 *SD* below the mean) in the Ethiopian sample ($\beta = -.20$, $t = -2.00$, $p = .04$) and the US

sample ($\beta = -.22$, $t = -2.00$, $p = .04$). However, when identification was high (1 *SD* above the mean), the Procedural Justice \times Trust interaction did not significantly predict voluntary compliance in the Ethiopian sample ($\beta = .04$, $t = .46$, $p = .65$) or the US sample ($\beta = .03$, $t = .45$, $p = .65$). Thus, among citizens who weakly identify with the nation, the relationship between procedural justice and voluntary tax compliance varied significantly as a function of their level of trust in the authority. However, for citizens who strongly identify with the nation, the relationship between procedural justice and voluntary tax compliance did not significantly vary as a function of their level of trust in the tax authority.

We proceeded with further simple slopes tests to decompose the simple Procedural Justice \times Trust interaction among low and high identifiers. In line with our argument, for the Ethiopian sample, the results of this analysis showed that when identification was low (1 *SD* below the mean) and trust was low (1 *SD* below the mean), the relationship between procedural justice and compliance was positive and significant ($\beta = .31$, $t = 2.01$, $p = .04$). When identification was low (1 *SD* below the mean) and trust was high (1 *SD* above the mean), the relationship between procedural justice and compliance was significant and negative ($\beta = -.28$, $t = -2.50$, $p = .01$). A potential explanation for this unpredicted relationship could be the “cops and robbers” climate that the Ethiopian respondents have become used to. These respondents may value a match between the actions of the tax authority represented by low procedural justice and their experience with the authority. This perceived match (while trust is high, suggesting respondents believe they will not be taken advantage of) may have resulted in positive responses to low (compared to high) procedural justice. However, this is speculation and we leave open the possibility that this specific simple relationship between low (vs. high) procedural justice and high tax compliance is a statistical fluke, as it did not also replicate in the US sample (see

below).

In the US sample, when identification was low and trust was low (1 *SD* below the mean), the relationship between procedural justice and compliance was positive and significant ($\beta = .45$, $t = 2.72$, $p = .01$). When identification was low (1 *SD* below the mean) and trust was high (1 *SD* above the mean), the relationship between procedural justice and compliance was not significant ($\beta = -.01$, $t = -.02$, $p = .98$).

Although at high levels of identification the simple slopes of the relationship between procedural justice and voluntary compliance did not significantly differ as a function of the level of trust, we nevertheless conducted simple slopes analyses to test if, among highly identifying citizens, the simple slopes may be significantly different from 0. In the Ethiopian sample, these analyses showed that, when identification was high, procedural justice did not predict voluntary tax compliance at both low ($\beta = .21$, $t = .93$, $p = .36$) and high ($\beta = .26$, $t = 1.61$, $p = .11$) levels of trust. Similarly, in the US sample, when identification was high, procedural justice did not predict voluntary compliance regardless of whether trust was low ($\beta = -.11$, $t = -.74$, $p = .46$) or high ($\beta = -.04$, $t = -.23$, $p = .82$).

Appendix B shows that trust was significantly and negatively associated with enforced tax compliance in the US but not the Ethiopian sample. Furthermore, the three-way interaction that we predicted for voluntary tax compliance was not significant with enforced tax compliance as a criterion variable in both samples. This boosts our confidence in our specific argument that addresses fear of exploitation and identification and subsequent goal internalization as precursors of voluntary tax compliance. We also note that the sample of origin (Ethiopia vs. US) did not moderate our results³.

6. General Discussion

We showed that procedural justice of the tax authority is positively related to voluntary tax compliance particularly among citizens with low (vs. high) trust in this authority. However, this Procedural Justice \times Trust interaction was limited to citizens who weakly (vs. strongly) identify with their country. More specifically, high (vs. low) procedural justice predicts increased voluntary compliance only when identification is low and trust is simultaneously low. We obtained this effect in two samples, one of income taxpayers in a developing country (Ethiopia) and one of income taxpayers in a developed country (the US). In line with our expectations, we found no interactive effect of procedural justice, trust, and identification on enforced tax compliance. In the following sections we discuss the implications and limitations of these findings.

6.1 Theoretical Implications

Procedural justice is one of the most often studied and most established antecedents of voluntary compliance with the tax authority (e.g., [Doyle, Gallery, Coyle, & Commissioners, 2009](#); [Hartner et al., 2008](#)). However, as noted, prior studies have not always revealed consistent results. Some studies showed that high procedural justice is positively related to voluntary tax compliance (e.g., [Alm et al., 1993](#); [Farrar, 2015](#); [Hogan, Maroney, & Rupert, 2012](#); [Murphy, 2004](#); [Murphy & Tyler, 2008](#)). But other studies did not consistently show such a relationship (e.g., [Porcano, 1988](#); [Wenzel, 2002](#); [Worsham, 1996](#)). By identifying boundary conditions to the effect of procedural justice on voluntary compliance, we increase our understanding of when procedural justice can be expected to promote voluntary compliance and when this cannot be expected. Our research thus also suggests why prior research sometimes succeeded and sometimes failed in revealing a significant relationship between procedural justice and voluntary tax compliance. Of course, the inconsistency in prior findings might also be (partly) attributable to the way procedural justice of the tax authority was operationalized, as we highlighted in the measures

part of our study.

Second, prior work has identified trust in the tax authority and identification with the nation as factors that explain why procedural justice leads to voluntary tax compliance. However, until now, no work has considered how trust and identification processes may relate to each other. By including both variables as moderators of the relationship between procedural justice and voluntary compliance, the present research reveals how these two processes interrelate. Individuals respond positively (i.e., with increased tax compliance) to high procedural justice when they have low (vs. high) trust in the tax authority. In other words, low trust makes individuals focus on procedural justice information to assess whether they want to contribute to the collective. However, strong identification with the nation overrides these concerns, as identification implies that one internalizes collective goals, thus making one care less about one's own personal outcomes. Our research thus suggests that the processes described in fairness heuristic theory (Lind, 2001) are fundamentally self-focused in nature; they disappear under strong identification with the nation.

By being the first to test a tax compliance hypothesis in a developing as well as a developed nation, our research also contributes to the tax compliance literature more broadly. One important limitation of the extant literature is that little research has explored tax compliance in developing countries, in contrast to the extensive studies conducted in Western nations (Doyle, Frecknall-Hughes, & Summers, 2009; Saad, 2011; Torgler & Schneider, 2007). Because of this scarcity of tax compliance studies in developing countries (for exceptions, see Abdul-Razak & Adafula, 2013; Alabede, Ariffin, & Idris, 2011; Gobena & van Dijke, 2016; Smulders & Naidoo, 2013), there is virtually no comparison of results across cultures. Yet, as noted, the tax environment in many developing countries differs in important ways from that in

Europe and the US, as in developing countries (more than in developed nations), taxpayers usually do not view paying taxes as a contribution to the buildup and maintenance of common public goods (Asaminew, 2010; Fjeldstad & Semboja, 2001; Gangl, Torgler, Kirchler, & Hofmann, 2014). Of course, taxpayers' determination to evade taxes in developing countries seems to reciprocate the actions of tax authorities, who often show little trust in taxpayers as reasonable citizens and seem to believe that coercion can solve all problems related to tax (non-) compliance, contrary to the relations in developed countries. This is also illustrated in our research, in which we found that the level of trust of taxpayers in tax authorities, the level of perceived procedural justice, and the level of voluntary compliance are higher in the US than in Ethiopia. Our tests of the hypothesis in two samples that are very divergent in terms of their tax environments and tax morale clearly contribute to the confidence that we can have in these findings and, more generally, contribute to our confidence in the social psychological approach to stimulate voluntary tax compliance across the world.

6.2 Practical Implications

We contribute to the practice of tax administration in two ways. First, the most important policy alternatives to deal with self-focused taxpayers who weakly identify with the nation are for the tax authority to either work in a way that it would be perceived by those taxpayers as being high in procedural justice or to be sufficiently coercive as to deter tax evasion. This last alternative is being followed by most authorities in developing countries, who have not worked hard to build mutual trust with their citizens (Bekana et al., 2014; Fjeldstad, 2001). However, it is a costly approach (Alm, Kirchler, & Muehlbacher, 2012; Alm, Kirchler, Muehlbacher, Gangl, Hofmann, Kogler, & Pollai, 2012; Gangl et al., 2015; Murphy & Tyler, 2008) that likely drains the meager tax money that authorities in these countries collect. Our findings highlight that procedural justice is

particularly important in order to foster voluntary tax compliance for authorities who are not trusted by citizens who weakly identify with their nation.

Second, we contribute to the manner in which tax authorities may have to administer taxation in order to initiate and sustain a high level of voluntary compliance with taxation through an interaction between procedural justice, trust, and identification with the nation. We found that identification with the nation, in its own right, significantly predicts voluntary tax compliance in both samples. This implies that individuals internalize the values and norms of the group with which they identify and voluntarily cooperate with the authorities that represent the group. Therefore, it is important to work on policies and procedures that beget citizens' identification with the nation (De Cremer & Tyler, 2005; van den Bos, Vermunt, & Wilke, 1996).

6.3 Limitations

Our study is not without limitations. A first limitation results from the cross-sectional nature of our study, which does not allow drawing causal conclusions. Future studies should clarify the causal links between the study variables using experimental or longitudinal designs. Yet it should be noted that prior experimental studies (e.g. Doyle, Gallery, Coyle, & Commissioners, 2009; van Dijke & Verboon, 2010), including field experiments (Wenzel, 2006), provided causal support for the effect of procedural justice on voluntary tax compliance. Future research should address the causal roles of trust in authorities and identification with the nation in experimental settings, for instance, using bogus pipeline procedures (e.g., Doosje, Ellemers, & Spears, 1995; van Dijke & De Cremer, 2010).

A second limitation is that our nonrandom sampling technique in both samples likely hampered the representativeness of our respondents for the populations from which they were drawn. The use of AMT is particularly criticized on the ground that the sample recruited does not

represent the US population (see Goodman and Paolacci, 2017). Nevertheless, since our intent is testing theory rather than generalizing the finding to a specific population, the use of nonrandom samples does not limit our conclusions. This is because while testing theory, all measures are indirect indicators of theoretical constructs, and no methodological procedures taken alone can produce external validity (see Lucas, 2003). We also argue that our studies are high in ecological validity (see Leary, 2012) relative to prior field studies, which were conducted almost solely in Western countries. That is because the dissimilarity of the two samples provides strength to the conclusions we draw, as replication of results over distinct nonrandom samples implies dependability of the results.

7. Concluding Remarks

Procedural justice is one of the most useful and practical tools that have been identified by social-psychological research to stimulate voluntary tax compliance. The present research helps us to understand why this effect is not always found, what the processes are that underlie this effect, and how general the effect is across different taxation climates. Investigating interactions between established antecedents of voluntary tax compliance can thus result in theoretical progress as well as practically useful results that are applicable in both developing and developed nations.

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Notes

1. Items 2 and 6 from the [Colquitt \(2001\)](#) measure refer to “outcomes” of the authority’s decision. We assumed that respondents in both samples would understand what such outcomes can be (e.g., individual taxpayers winning a tax refund claim, adjustments made to tax rates, or selection of taxpayers for tax audit). The Ethiopian sample consisted of business owners who likely had experience in interacting with the tax authority. The US respondents would have also had experience in interacting with the tax authority, as the United States federal and state income tax systems are self-assessment systems requiring that taxpayers must declare, file, and pay taxes without assessment by the taxing authority; the relevant tax authority later decides on which taxpayers to audit (see [Roach, 2010](#)). Analyses showed that in both samples the Procedural Justice \times Trust and Trust \times Identification was similar in shape and significance regardless of whether the two items containing a reference to “decision outcomes” were included or not.
2. We conducted OLS regression analyses in addition to the robust regression results reported in the main text. We did this to see if our results differ when OLS regression is used. We opted to not report OLS regression results in the main text because OLS regression is sensitive to the presence of outliers. Besides, when the criterion variable contains errors (such as those occurring when it is measured with self-report scales), the standard errors of the slope coefficients become inflated (although the estimation of the slopes is unbiased) when OLS regression is used. The OLS regression revealed results that were almost identical to the results presented in the main text. There were two differences. First, short of supporting our hypothesis, in the Ethiopian sample, the simple slope for the effect of procedural justice on voluntary compliance when identification was low (1 *SD* below the

mean) and trust was also low (1 *SD* below the mean) was not significant ($\beta = .20, t = .91, p = .36$). Second, contrary to the result in linear regression with robust standard errors and in support of our hypothesis, in the Ethiopian sample, the simple slope for the effect of procedural justice on compliance when identification was low (1 *SD* below the mean) and trust was high (1 *SD* above the mean) was not significant ($\beta = -.28, t = -1.60, p = .11$).

3. To test whether any of the results differed significantly between the two samples, we combined the two datasets and tested if sample of origin (i.e., Ethiopian vs. US sample) moderated any of the main effects, simple interactions, or the three-way interaction of procedural justice, trust, and identification. We found no evidence that the sample moderates any of these effects.

Appendix A

Below is a list of two of the measures used in this paper. All responses were on a Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *moderately disagree*, 4 = *neither agree nor disagree*, 5 = *moderately agree*, 6 = *agree*, 7 = *strongly agree*).

Procedural Justice (Colquitt, 2001)

The following items refer to the procedures used to arrive at tax-related decisions.

1. I have been able to express my views and feelings during those procedures.
2. I have had influence over the (outcomes) arrived at by those procedures.
3. Those procedures have been applied consistently.
4. Those procedures have been free of bias.
5. Those procedures have been based on accurate information.
6. I have been able to appeal the (outcomes) arrived at by those procedures.
7. Those procedures have upheld ethical and moral standards.

Identification with the Nation (Tyler & Blader, 2001)

1. My nation is important to the way I think of myself as a person.
2. When someone praises the accomplishments of my nation, it feels like a personal compliment to me.
3. When I talk about my nation I usually say "we" rather than "they."
4. I feel a sense that I personally belong to Ethiopia/the US.
5. I feel that the problems of my nation are my own personal problems.
6. When someone from outside criticizes my nation, it feels like a personal insult.
7. I feel like a valued member of my nation.
8. When something goes wrong in my nation, I feel a personal responsibility to fix it.

9. My nation says a lot about who I am as a person.
10. I do not feel like an important part of my nation (reverse coded).

Appendix B

Insert **Appendix B** about here

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