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# Procedural Justice and Police Legitimacy

## Evidence from a Vignette Experiment in Central America

Santiago M. Perez-Vincent  
David Puebla

Inter-American Development Bank  
Institutions for Development Sector  
Innovation in Citizen Services Division

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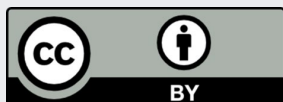
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## Abstract\*

This paper examines the impact of procedural justice and sanctions on police legitimacy in a middle-income context using a between-subjects vignette experiment among civilians and police officers in Honduras. The scenarios involved civilian–police interactions following a minor infraction, varying in whether the police officer treated the civilian respectfully or disrespectfully, and whether a sanction (fine) was imposed. Respectful treatment increased satisfaction, acceptance of decisions, and willingness to cooperate, while sanctions had the opposite effects on these variables. Sanctions lowered the perceived likelihood of repeating the infraction, whereas respectful treatment had no effect on it. Results were similar for civilians and police officers, though officers assigned greater importance to procedural justice. The study concludes that, while sanctions deter repeated infractions, they can erode legitimacy if not applied respectfully, highlighting the importance of procedural justice in civilian–police interactions. The positive impact of procedural justice among both civilians and officers’ perceptions supports the desirability and feasibility of its application in this context.

JEL codes: K42, H11

Keywords: procedural justice, legitimacy, police, vignettes, Central America, Honduras

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## 1. Introduction

Legitimacy is a property of an authority or institution that leads people to feel that that authority or institution is entitled to be deferred to and obeyed. (Sunshine and Tyler, 2003: 514)

Legitimate police agencies can achieve better law enforcement and public cooperation, contributing to civic coexistence and the rule of law (Sunshine and Tyler, 2003; Jackson and Bradford, 2010; Tyler and Huo, 2002) and, ultimately, to social development.

Despite the relevance of legitimacy to the police function, achieving it—which involves gaining civilians’ respect, trust, and cooperation—is a complex and elusive goal for many police agencies worldwide. This challenge is particularly relevant in Latin America and the Caribbean (LAC), where many countries have a long history of mistrust and negative public perceptions of the police that persist to this day. In 2021, LAC was the region with the lowest level of trust in the police (51 percent), well below the global average (70 percent) and the level for other regions such as Western Europe, Southeast Asia, and North America (Gallup, 2022).

What can police agencies do to build legitimacy? Improving their effectiveness in preventing and reducing crime is critical for public perception (Nix, 2017; Tankebe, 2009; Bradford et al., 2014), but it may not be enough to build legitimacy among the public. In recent decades, the academic literature has emphasized the importance of procedural justice in achieving legitimacy, cooperation, and willingness to accept the authority (Murphy et al., 2008, 2009; Tyler and Huo, 2002; Tyler, 2003; Jackson et al., 2012; Hinds and Murphy, 2007). Procedural justice refers to the idea that everyone should be treated fairly, equitably, and respectfully, regardless of socioeconomic status, race or ethnicity, gender, or personal background. In law enforcement, a critical application of procedural justice focuses on how people are treated during officer–civilian encounters, emphasizing respect, fairness, transparency, and the opportunity for the different parties to be heard.

This study examines the impact of procedural justice and the application of sanctions by the police on civilians’ and police officers’ perceptions of the police in Honduras. This Central American country has made notable progress over the last decade, reducing its homicide rate from about 80 per 100,000 inhabitants in 2012 to 38.3 per 100,000 in 2021 (UNODC, 2023). Despite this improvement, the 2021 homicide rate in Honduras is still six times the global average. Using a between-subjects vignette experiment design similar to that of Reisig et al. (2018), both civilians and police officers in Honduras were surveyed to assess their reactions to varied scenarios of civilian–police interactions centered around a minor civic coexistence incident (a complaint about a loud party in the neighborhood and a traffic violation). These scenarios differed in terms of the quality of treatment (respectful vs. disrespectful) and the imposition (or lack thereof) of a sanction (i.e., a fine). The study assessed respondents’ differences in terms of satisfaction

with the treatment of the civilian, acceptance of the police decision, willingness to cooperate with the police, and willingness to repeat the infraction.

The study presents two main innovations to the literature on procedural justice and police legitimacy that shed additional light on their relationship. First, the study focuses on a country in Central America, a low- and middle-income region characterized by high levels of crime and low levels of trust in the police. This setting distinguishes this study from most studies in this literature, which are conducted in high-income countries (Nivette et al., 2024).<sup>1</sup> The relevance of this innovation lies in the fact that public demands for security policies and strategies that incorporate procedural justice principles can be affected by the types, severity and level of crime, the institutional capacity, and the level of alignment of values between civilians and authorities (Ayres, 1998; Arriagada and Godoy, 1999; Friman, 2009; Lafree, 2007; Anrango Narváez et al., 2023), thus limiting the validity of results observed in different contexts. Thus, this study allows for examination of the generalizability of the importance of procedural justice and its applicability in a place where citizen security challenges are highly complex and effectiveness might be considered a more important predictor of legitimacy (Tankebe, 2009; Bradford et al., 2014; Kochel et al., 2013; Johnson et al., 2014; Akinlabi, 2017).

Second, the study analyzes the impact of procedural justice—and its importance relative to the application of a sanction—on the perceptions of both civilians and police officers using the same survey experiment. The alignment of civilians' and police officers' beliefs, values, and goals is necessary for program sustainability (Trojanowicz, 1972; Greene and Decker, 1989). In the case of procedural justice protocols, effective and sustainable implementation requires that civilians value respectful treatment, the opportunity to be heard, trustworthiness, and neutrality, and that these values are perceived as relevant by the police. The study allows examination of both sides of this equation, that is, to determine whether there is both a demand by civilians for respectful procedures and a recognition by the police of the importance of these procedures. Most of the available literature has conducted this type of analysis within specific groups, without incorporating the participation of another group. The analyzed groups in the literature have predominantly consisted of civilians (Bradford et al., 2009; Bradford, 2014; Mazerolle et al., 2012; Murphy et al., 2014), police personnel (Nix, 2017; Nix et al., 2017; Antrobus et al., 2019; Skogan et al., 2015; Rosenbaum and Lawrence, 2017), or university students, typically criminology majors (Maguire et al., 2017; Reisig et al., 2018; Brown and Reisig, 2019; Johnson et al., 2017; Solomon, 2019) who may have internalized some concepts learned during their formative years (Antrobus et al., 2019; Rosenbaum et al., 2017; Wheller et al., 2013; Wood et al., 2020; Skogan et al., 2015; Fildes et al., 2019; Dai, 2021). This training may lead to different evaluations of procedural justice principles and sanctions between criminology students or police officers and civilians, also limiting the external validity of findings in the literature. A few studies have simultaneously analyzed perceptions from both civilians and police. In most cases, their findings show that civilians often have a more favorable view of police work than the police anticipate. For

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<sup>1</sup> In a recent systematic review of studies that employed experimental vignettes to investigate the impact of procedural justice on attitudes toward the police, Nivette et al. (2024) identified 20 independent studies. Among these, 15 were conducted in the United States, 3 in Australia, and 2 in Ghana.

instance, in Australia, police officers undervalued procedural justice principles compared to drivers during alcohol testing stops and believed drivers to be less cooperative than they reported (Bates et al., 2015). Similarly, in Slovenia and Texas, police officers perceived lower public cooperation and satisfaction levels than what civilians reported (Nalla et al., 2018; Liederbach et al., 2008). However, these insights primarily stem from studies in high-income countries, and generalizing these conclusions to lower-income nations marked by high crime rates and weaker institutions might not directly apply.

This study finds that, among the civilians and police officers surveyed in Honduras, the police's application of procedural justice and sanctions affects the perception and evaluation of civilian-police interaction. In general, applying a sanction reduces satisfaction with treatment, acceptance of the police decision, and willingness to cooperate with the police, but the application of procedural justice largely counteracts these effects. On average, among the civilians surveyed, the application of a sanction reduces satisfaction with treatment and acceptance of the decision by 24 percentage points, and it reduces the willingness to cooperate with the police in the future by 10 percentage points. In turn, the application of respectful treatment during the procedure increases satisfaction with treatment by 18 percentage points, increases acceptance of the decision by 15 percentage points, and increases willingness to cooperate by 11 percentage points. In addition, the study found that the application of a sanction reduces the predisposition to repeat an infraction by 10 percentage points. In contrast, respectful treatment has no significant effect on the predisposition to repeat.

These results support the idea that the application of procedural justice principles can be a useful complementary measure to support citizen security and coexistence, and to build legitimacy in police institutions not only in high-income countries, as the literature predominantly shows, but also in middle- and low-income countries with high crime rates. The study results are also very similar among the police officers surveyed, showing that both groups (civilians and police) value respectful treatment positively and disapprove of the application of sanctions through disrespectful procedures. Nevertheless, there are differences in the magnitude of the results from police officers and civilians, suggesting that police officers, on average, value respectful treatment more highly than civilians. In general, the study confirms that there is public demand for respectful procedures and police recognition of their importance, and the study suggests the need to manage police officers' expectations about possible changes in public behavior and perceptions when applying these principles.

The study contributes to the empirical evidence on the effectiveness of the application of procedural justice principles in the field of police institutions, a body of literature that has grown significantly in recent years (Mazerolle et al., 2013; Donner et al., 2015). In general, findings in the literature show that civilians highly value good treatment and that a person who feels listened to, respected, and treated fairly confers greater legitimacy on the police: the civilians are more satisfied with the treatment they receive and are more open to cooperating with the police (Mazerolle et al., 2012, 2013; Sahin et al., 2017; Maguire et al., 2017; Reisig et al., 2018; Brown and Reisig, 2019; Johnson et al.,



2017; Solomon, 2019; Abril et al., 2023). However, a notable difference with evidence from high-income countries is that, compared to civilians, police tend to overestimate the effectiveness of applying procedural justice principles in achieving cooperation, acceptance of decisions, and satisfaction with treatment. This study complements the literature that studies the application of procedural justice principles in other fields where there is a power relationship and to strengthen the relationship to promote compliance with legal, organizational, institutional, and social norms (Cohen-Charash and Spector, 2001; Bobocel and Gosse, 2015; Colquitt, 2004; Zapata-Phelan et al., 2009; Rubin, 2007). The study's results also show the external validity of the effectiveness of these principles in the relationship between police and civilians in middle- and low-income contexts characterized by high crime. The results support the importance of applying these principles in contexts facing complex public safety challenges, account for their feasibility in terms of the existence of public demand and institutional recognition of their importance, and suggest the importance of managing police officers' expectations when applying these principles. The results also show the importance of both sanctions *and* respectful procedures for maintaining civic coexistence and the rule of law. The imposition of sanctions can help prevent the recurrence of episodes that disrupt civic coexistence. Applying these sanctions through respectful procedures is fundamental to preventing sanctions from corroding police legitimacy. Although respectful treatment may not directly reduce future reoffending, its practical implementation remains crucial due to the societal value placed on good treatment by authorities and its potential contributions to building legitimacy, which can foster public support for the police by improving working conditions, budget allocation, and public cooperation in conflict resolution (Nagin and Telep, 2020).

The rest of the paper is organized as follows. Section 2 provides a literature review. Section 3 describes the methodology used. Section 4 provides a description of the data. Section 5 presents the main results. Section 6 provides conclusions. The appendixes provide further support and materials.

## 2. Literature Review

Procedural justice is a concept that emerges from the conceptual model of process-based regulation, which holds that interactions between the state and civilians must have two fundamental elements: quality of decision and quality of treatment (Tyler and Huo, 2002; Tyler, 2003; Mazerolle and Terrill, 2018). These aspects, in turn, converge in four principles that constitute the framework of procedural justice: (i) neutrality (being neutral in their decision making); (ii) voice (the opportunity to explain a situation and listen to opinions on what should be done); (iii) respect (treatment with respect and dignity); and (iv) trust (confidence in the reasons for the decision).<sup>2</sup>

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<sup>2</sup> The application of these principles has not been limited to the fields of citizen security and justice. Other fields in which the effectiveness of procedural justice has been evaluated include tax compliance (Gobena

From the perspective of police agencies, procedural justice focuses on primarily how people are treated during encounters between police officers and civilians. According to this approach, if police officers were to apply these principles in their interactions with civilians, doing so would increase legitimacy, the degree of cooperation, and the willingness to accept the authority's decision in the current and future cases, even if a sanction is involved (Lind and Tyler, 1988; Tyler, 1987, 2006; Thibaut and Walker, 1975).

Several experimental studies have attempted to validate the empirical relevance of the application of procedural justice principles by police agencies using different methodologies. One stream of literature has evaluated the effectiveness of applying procedural justice protocols in real cases through predeveloped scripts given to police officers to guide their interactions with civilians. For example, in a study conducted in Australia with civilians who had an actual encounter with police for a breathalyzer test, Mazerolle et al. (2012) found evidence that police treatment that followed the four principles of procedural justice increased civilians' compliance and satisfaction with the encounter. Using a similar approach among a sample of civilians in Turkey, Sahin et al. (2017) found that satisfaction with the encounter increased when civilians were treated according to the principles of procedural justice. MacQueen and Bradford (2015; 2017) conducted similar work in Scotland, finding no differential effects between different types of treatment, which they attribute to noncompliance with assigned protocols in the control group.

Another stream of literature has used experimental designs of video vignettes that create fictional scenarios, typically of an encounter between a police officer and a motorist, to determine how procedural justice can alter participants' willingness to cooperate, their willingness to comply with the law, and their satisfaction with the encounter. Johnson et al. (2017) showed U.S. students videos of scenarios that varied in two respects—the quality of the treatment by police and the individual's race—and found that procedural justice increased satisfaction with the encounter, but more so when the sanctioned individual was white. Lowrey et al. (2016) and Maguire et al. (2017) conducted a similar experiment among two different samples of U.S. students and found that procedural justice treatment improved willingness to cooperate and obey, and increased trust in the police. In a similar setting, Solomon (2019) showed videos of scenarios that varied in the quality of treatment, the quality of the decision-making process (decision quality), and the race of the individual, and found that the quality of treatment affected legitimacy more than the quality of the decision-making process. These studies demonstrate the importance of respectful treatment in civilian-police encounters, but they do not identify its relative importance or the sensitivity of these effects to the sanction applied, since the same sanction is applied in all scenarios.

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and Van Dijke, 2017; Murphy, 2005; Wenzel, 2006), public services (Esaiasson, 2010), conflict resolution (Albin and Druckman, 2012; Druckman and Wagner, 2017), labor relations (Folger, 1987; De Clercq and Pereira, 2020; Sweeney and McFarlin, 1993; Cloutier and Vilhuber, 2008; Rubin, 2007), business organization (Wutich et al., 2016; Bowen et al., 1999; Karam et al., 2019), customer service (Orsingher et al., 2010; Gelbrich and Roschk, 2011), relationships in education (Tyler and Caine, 1981), participation in natural resource use decisions (Grillos et al., 2021; Lawrence et al., 1997; McLaren, 2012), and public-private partnerships (Thorpe, 2018).

Vignette experiments with written scenarios have also been used to analyze the effectiveness of applying procedural justice principles (Nivette et al., 2024). Using this method, Brown and Reisig (2019) simulated scenarios that differed in the type of treatment of the civilian by the police officer and found that procedural justice increased the perception of legitimacy among the participating university students. In one of the few studies conducted in a low- or middle-income country, Nivette and Akoensi (2019) find that procedural justice has a positive effect on public satisfaction among a sample of Ghanaian civilians. Using a vignette experiment with students in Australia, Barkworth and Murphy (2015) find that emotions mediate the effect of procedural justice on legal compliance. Nix et al. (2017), using two vignette experiments with U.S. police officers, test whether the salience of procedural justice enforcement depends on the suspect's race and disrespectful attitude. In the study, police officers did not show a preference for applying procedural justice principles based on the suspect's race, but they believed it was less important to enforce procedural justice in the face of a suspect's disrespectful attitude.

Despite the extensive literature demonstrating the importance of the application of procedural justice principles, there is little evidence of their importance in terms of the acceptability and desirability of the sanctioning decision. Among the exceptions is the study by Paternoster et al. (1997), who found in a sample of 1200 U.S. individuals arrested for domestic violence that procedural justice reduced the likelihood of future recidivism by a level similar to that of receiving a warning sanction and early release. In a study of U.S. civilians with prior interactions with the police, Tyler and Huo (2002) show that willingness to accept the agency's decision depends on whether the decision is desirable and respectful, but treatment that incorporates procedural justice principles proves more important. In a study of Australian civilians, Barkworth and Murphy (2015) show that the quality of treatment and the favorability of the authority's decision can influence the decision to report a crime, but that influence depends on the type of crime analyzed. For example, according to the study, the quality of treatment is more important for victims of robbery and domestic violence, while the favorability of the decision is more important for victims of car theft. A common feature of the studies cited above is that they do not consider an experimental methodology that allows identifying and robustly testing the effects of procedural justice and the desirability of the sanction or the outcome of the interaction. A notable exception is the study by Reisig et al. (2018), which applied a vignette design with two hypothetical situations—a traffic stop and a complaint about annoying noise—to U.S. criminology students to assess the importance of treatment quality and outcome desirability on dimensions such as satisfaction with the encounter, desirability of police handling the situation differently, immediate compliance, and decision acceptability. The authors found that both procedural justice and the outcome of the interaction (whether there was a sanction or not) produced effects in the expected direction, although their relative importance depended on the dimension analyzed. For example, procedural justice was more important for handling the situation differently, immediate compliance, and satisfaction with the encounter, while the effect of receiving a sanction was greater than procedural justice for accepting the decision. This important piece of evidence leaves

open the question of the external validity of these results in other social groups and contexts with different levels of crime and violence.

A distinctive feature of this study is that it includes both civilians and police officers. While in the survey experiment, both civilians and police officers are tasked with assessing scenarios from the viewpoint of “Carlos,” a civilian, their different backgrounds might lead to divergent perceptions. For example, on the one hand, police officers may have internalized some concepts learned during their formative years (Antrobus et al., 2019; Rosenbaum et al., 2017; Wheller et al., 2013; Wood et al., 2020; Skogan et al., 2015; Fildes et al., 2019; Dai, 2021) and, therefore, may be primed to recognize the value of respectful treatment. On the other hand, police officers could inadvertently be biased to justify certain police actions or downplay disrespectfulness, which may appear less favorable to civilians. The direction and magnitude of the difference between these groups’ perceptions remains an open empirical question. Addressing this empirically is critical, as the successful implementation and sustainability of certain policing practices probably require the alignment of perceptions between civilians and law enforcement.

Examining the relationships between procedural justice and the acceptability or desirability of the sanctioning decision in a high-crime setting has additional theoretical relevance. The sanction could lead to a diminished acceptance of police decisions, especially if those involved believe others engaged in similar behaviors do not receive sanctions. Furthermore, the perceived unfairness or the undesirability of the sanction can reduce the willingness to cooperate in the future. On the flip side, sanctions, if perceived as consistently applied and proportionate to the violation, might be viewed as a sign of police efficiency and fairness. This could boost trust in the police, leading to greater satisfaction with encounters and increased willingness to cooperate in the future. Given these contrasting potential reactions, the actual effects of sanctions on trust, satisfaction, and willingness to cooperate in the future are uncertain, underscoring the importance of empirical investigation, as in this study.

In terms of the willingness to reduce criminal behavior and recidivism, the influence of procedural justice is less clear-cut. While early theories of procedural justice suggested a direct link to increased legal compliance (Tyler, 2006), more recent studies and discussions, such as those by Nagin and Telep (2020), have introduced a degree of skepticism. Given this ongoing debate, this paper does not present a definitive hypothesis on the effect of disrespectful treatment on recidivism, but instead aims to contribute further insights. In contrast, the imposition of a sanction should, in principle, act as a deterrent to criminal behavior. The immediate, tangible consequence of a fine serves as a reminder of the repercussions of certain behaviors. Regardless of one’s feelings about the encounter or opinions on the fairness of the decision, sanctions represent a cost. Consequently, we would expect that civilians exposed to a sanction would be less willing to repeat the infraction. This aligns with the core tenets of deterrence theory, where the presence of a clear and immediate consequence can influence future behavior.

### 3. Methodology

This study aims to investigate the impact of applying sanctions and of applying principles of procedural justice on perceptions of the police in Honduras by two groups: civilians and police officers. To do so, we use a vignette experiment based on Reisig et al. (2018), which presents two common situations of civilian–police encounters, to resolve a complaint about a loud party in the neighborhood and a traffic violation, which vary in terms of the quality of treatment and the application or not of a sanction.<sup>3</sup>

#### 3.1 Vignette Experiment

Vignette experiments allow us to simulate scenarios based on real-life encounters and determine how variations in characteristics between scenarios produce different perceptions (Alexander and Becker, 1978). The vignette design has been widely used in justice and crime research because of its versatility in studying phenomena that are difficult to isolate in real life due to their correlation with other characteristics, the difficulty of measuring abstract aspects, and biases in reporting socially accepted behaviors that are not necessarily followed in practice (Phillips, 2009, 2010, 2020; Reisig et al., 2018; Brown and Reisig, 2019; Nix et al., 2017; Nivette and Akoensi, 2019; Girgenti-Malone et al., 2017; Kutnjak Ivković and Kutnak, 2012; Son et al., 1998). By manipulating hypothetical scenarios and randomly assigning individuals, we can simulate an experimental design that allows for rigorous inference in complex phenomena under study.

In addition to the advantages of the vignette design commonly used in the literature, this study also took advantage of its usefulness in measuring perceptions to determine how they differ between two subgroups of the population. A series of scenarios was constructed and included in a survey administered to both civilians and police officers. The characters involved in the hypothetical scenarios of the vignettes are a male police officer and a male civilian (“Carlos”), and the vignettes were expressed in the third person, so that the police officers and civilians surveyed receive the same information and are “observers” of the same situation, regardless of the role they play in real life.

Two different situations were considered in the vignettes: a party with noise disturbing the neighborhood and failure to obey a traffic signal. Appendix A presents the original vignettes given to respondents (in Spanish) and their translation to English. In each situation, we varied the type of treatment given by the police officer to the civilian (respectful or disrespectful) and the application of a sanction (fine or no fine). This resulted in four possible combinations for each event, thus eight possible scenarios in total—two events multiplied by two types of treatment (respectful/disrespectful) multiplied by two outcomes (fine/no fine). Each respondent, civilian or police officer, was presented with one of the eight possible scenarios, which were randomly assigned, thus obtaining an experimental design. The scenarios are detailed in Appendix A.

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<sup>3</sup> Using this method preserves an experiment structure comparable to that of Reisig et al. (2018), but further research could gain from testing the validity of the results using other scenarios.

After reading the scenario, each individual answered a series of questions designed to assess: (i) satisfaction with the treatment, (ii) willingness to accept the police officer's decision, (iii) willingness to cooperate, and (iv) willingness to repeat a similar infraction. In each question, respondents had to answer by selecting one of four options (not at all, a little, quite a lot, completely), which were assigned values from 1 to 4. Complementary binary variables were also generated to check for robustness of the main results, taking the value 0 for those respondents who answered "not at all" or "a little," and 1 for those who answered "quite a lot" or "completely." In the first three questions, a higher value corresponds to a better evaluation of the scenario and of the police by the respondent (i.e., greater satisfaction with the treatment, greater willingness to accept the decision of the police officer, and greater willingness to cooperate, respectively). In the fourth question (likelihood of repeating the infraction), a lower score corresponds to more desirable behavior (i.e., not repeating the infraction). The questions and response categories are also detailed in Appendix A.

### 3.2 Statistical Model

To determine how the characteristics of the simulated scenarios influence the perceptions of police by police officers and by civilians, we estimated a linear regression model (using ordinary least squares, or OLS) with each of the four dimensions analyzed as dependent variables (satisfaction with treatment, willingness to accept the police officer's decision, willingness to cooperate with the authority, and likelihood of repeating the infraction) and the characteristics of the vignettes (respectful or disrespectful treatment, and application of sanctions or not) as independent variables.

$$Y_{i,v} = \beta_0 + \beta_1 \text{SANC}_i + \beta_2 \text{DIS}_i + \gamma_v + \varepsilon_{i,v} \quad (1)$$

where  $Y_{i,v}$  is the value that the dependent variable takes for respondent  $i$  who responded to a scenario of the vignette  $v$ .  $\text{SANC}_i$  is a dummy variable that takes the value of 1 if the individual  $i$  in the scenario  $v$  receives a sanction.  $\text{DIS}_i$  is a dummy variable that takes the value of 1 if the individual  $i$  receives disrespectful treatment in the vignette scenario (i.e., not in accordance with the principles of procedural justice).  $\gamma_v$  is vignette fixed effects. In the equation,  $\beta_1$  and  $\beta_2$  are the coefficients of interest, which capture the average difference in respondents' perceptions between scenarios in which a sanction is applied and those in which a sanction is not applied ( $\beta_1$ ), and between scenarios with and without disrespectful treatment ( $\beta_2$ ).

Our main specification is a "short model" (Muralidharan et al., 2023) that does not include an interaction term of both treatments. This short model (Model 1) focuses on the effect of the sanction and disrespectful treatment separately, providing a (weighted) average of their effect across the two states of the other treatment variable (Zhao and Ding, 2022).<sup>4</sup>

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<sup>4</sup> Zhao and Ding (2022) provide the formal expression of the estimand of  $\beta_1$  and  $\beta_2$ . Appendix C (Table C.1) shows the "long model" with the interaction term between sanction and disrespectful treatment, which provides estimates of the following: (i) the treatment effect of each variable conditional on the baseline level of the other; (ii) the difference in treatment effects across states of the other variable (interaction term).

In a complementary manner, we also estimate an extended model to determine whether the perceptions of police by police officers and of police by civilians on the dimensions of respectful treatment and application of a sanction are different. In this model (Model 2), we added interaction terms, as follows:

$$Y_{i,v} = \alpha_0 + \alpha_1 \text{SANC}_i + \alpha_2 \text{DIS}_i + \alpha_3 \text{POL}_i + \alpha_4 \text{SANC}_i \times \text{POL}_i + \alpha_5 \text{DIS}_i \times \text{POL}_i + \gamma_v + \varepsilon_{i,v} \quad (2)$$

where  $\text{POL}_i$  is a dummy variable that takes the value of 1 if the respondent  $i$  is a police officer. The coefficients  $\alpha_4$  and  $\alpha_5$  allow us to determine whether there is a difference between the perception of police officers and the perception of civilians in the assessment of the application of the sanction and the treatment on the four dimensions studied.

#### 4. Data

The study uses information collected through a survey of police and civilians in Honduras. The target population was defined in several steps. First, the sample of police officers was selected from the official lists of the Honduran National Police in three municipalities in the northwestern part of the country. Of the total number of police officers in each municipality, 72 percent, 86 percent, and 84 percent were interviewed, respectively, for a total of 305 surveys.<sup>5</sup> After collecting information from the police officers, we worked on the selection of the civilian sample, choosing a sample size and gender and age composition similar to that of the police officer sample. The sample of civilians was selected in the same areas as the sample of police officers, and consisted of people in the network of contacts of the implementing partner (Glasswing International), mayors' offices, community leaders, people recommended by community leaders, and from through in-person outreach efforts in public locations, all to reach a total of 374 people. Information on police officers was collected in February 2021, and information on civilians was collected in May of the same year. Of the total number of respondents, information from four civilians was omitted because they did not respond to the vignette questions or responded to more than one vignette.

Table 4.1 summarizes the descriptive statistics of the study groups. The average age of the police officers was 26.6 years, the percentage of male officers was 82.4 percent, and although all officers were active, 5.6 percent did not work during the week prior to the survey. Due to the strategy used to select the sample of civilians, the average age and percentage of males were similar to the sample of police officers. To increase comparability with the police sample, an attempt was also made to ensure that the civilian respondents were employed: 83.8 percent<sup>6</sup> reported having worked in the week prior to the survey. Finally, there were some key differences between the subgroups.

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<sup>5</sup> Not all police officers were interviewed because some of them were off duty, on annual leave, on medical leave, on emergency leave, or responding to emergencies caused by the COVID-19 pandemic and the storms that hit Honduras in late 2020.

<sup>6</sup> Civilians could participate in the study even if they did not have a job at the time of the survey, but they had to have worked previously.

Regarding level of education, the police officer respondents have a higher level of education than the civilians, with a high proportion of them having completed high school, as opposed to civilians, who have a higher proportion of people with only primary education. Police officers also tend to live in a different place from where they work, which is related to the organizational dynamics of police institutions.

**Table 4.1. Descriptive Statistics of the Sample**

Description	(1) Civilians	(2) Police	(3) National survey, 2019
N	370	305	
Average age	26.6	26.6	37.4
Men	82.4%	83.6%	61.3%
Employed	83.8%	94.4%	97.3%
<i>Work experience</i>			
< 1 year	45.9%	0.0%	
1 to 3 years	35.7%	52.5%	
3 to 7 years	11.9%	30.8%	
7 to 15 years	3.8%	10.8%	
> 15 years	2.7%	5.9%	
<i>Education level, highest attained</i>			
Primary	40.5%	5.6%	60.4%
High school	39.5%	83.9%	27.8%
Higher than high school	20.0%	10.5%	11.2%
Single/divorced/widowed	54.9%	54.4%	46.7%
Has children	53.0%	48.9%	
Lives and works in the same location	57.6%	25.9%	

*Sources:* Study data (in columns 1 and 2) compiled by the authors; in column 3, the national survey considered was the Encuesta Permanente de Hogares de Propósitos Múltiples 2019 (Honduras, Instituto Nacional de Estadística, 2019).

*Note:* The data from the national survey corresponds to results obtained from the economically active population.

In addition to the data on Table 4.1, in terms of income, 75 percent of civilians and 29 percent of police officers reported a monthly earning below L9,700 (or Honduran lempira, or HNL; L9,700 is approximately US\$ 400), which aligns with the average labor income in the country. Nearly all participants, both civilians and police officers, indicated a monthly income less than L18,000 (US\$ 750). By comparing the characteristics of the study sample with the characteristics of the working population of a nationally representative survey of Honduras for 2019 (see Table 4.1, column 3), we find that the study sample is younger, is composed of more men, and is generally more educated.



## 5. Results

This section presents the impact of applying respectful treatment and imposing a sanction on the respondents' satisfaction with police treatment, the willingness to accept the police decision, the willingness to cooperate with the police in the future, and the likelihood of repeating a similar infraction, as measured by the survey experiment conducted among police and civilians.

First, to validate the design of the scenarios and respondents' comprehension of them, the perception of differences between the different scenarios in terms of the quality of treatment offered by the police officer was confirmed. The questionnaire included two questions on the quality of treatment by the police officer, which allowed for the answers to be checked to determine whether the scenarios in the vignettes were interpreted by the respondents as expected.<sup>7</sup>

Table 2 shows that police officers and civilians who read a scenario in which the police treated the civilian respectfully were more likely to agree that the police officer treated the civilian with respect and friendliness. The results indicate that the manipulations of the scenarios presented in the vignettes resulted in changes in perceptions as expected.

**Table 2. Perceptions of Treatment across Scenarios (Validation of Scenario Manipulations)**

	Civilians					Police				
	Respectful treatment (perception)		Friendly treatment (perception)		N	Respectful treatment (perception)		Friendly treatment (perception)		N
	Mean	SD	Mean	SD		Mean	SD	Mean	SD	
Respectful scenario	2.005	(0.090)	1.968	(0.090)	187	2.618	(0.067)	2.664	(0.060)	152
Disrespectful scenario	0.743	(0.075)	0.754	(0.077)	183	0.490	(0.076)	0.529	(0.080)	153
Difference	1.262***	(0.117)	1.214***	(0.118)	370	2.128***	(0.101)	2.135***	(0.100)	305

Source: Compiled by the authors.

Note: \*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01.

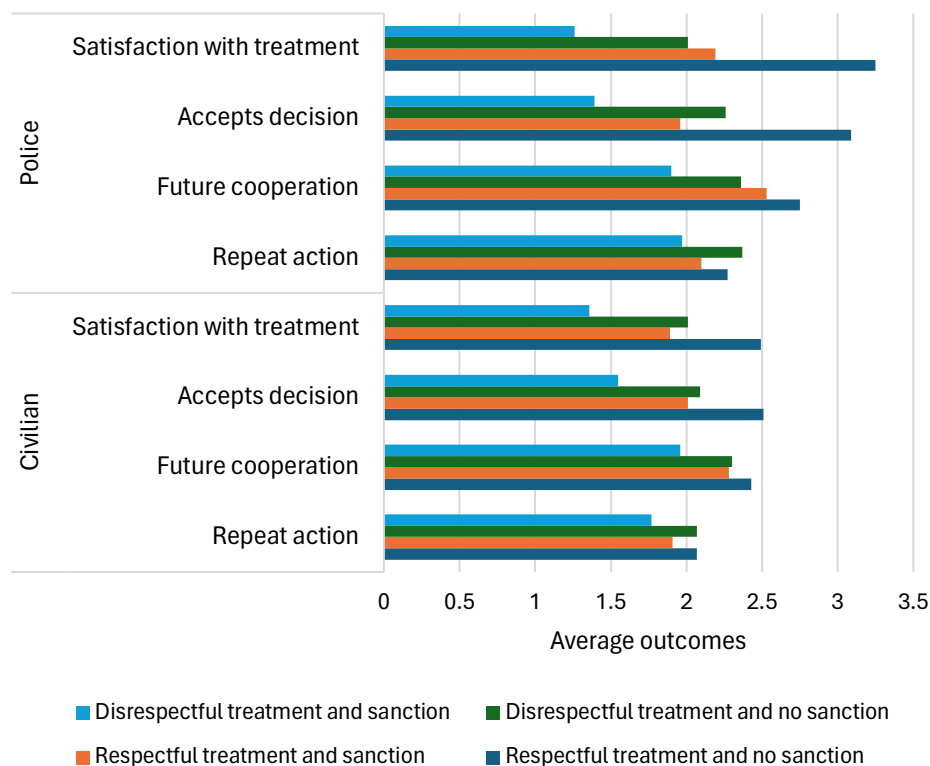
Then, for the scenarios and for the four outcomes, the averages of the responses were calculated. As noted earlier, the scenarios presented were: respectful treatment and no sanction, respectful treatment and sanction, disrespectful treatment and no sanction, and disrespectful treatment and sanction. The four outcomes analyzed were as follows: satisfaction with treatment, acceptability of decision, future cooperation, and repeat action.

Figure 5.1 (and Table B.2 in Appendix B) shows the results, distinguishing between police officer respondents and civilian respondents. The results show that, in general, the

<sup>7</sup> The questions were as follows: "In your opinion, did the officer treat Carlos with respect?" and "In your opinion, did the police officer treat Carlos nicely?" For each question there are four response options: (i) Strongly disagree; (ii) Partially disagree; (iii) Partially agree; (iv) Strongly agree.

scenario in which the police officer acts respectfully and does not impose a sanction is the one that receives the best rating in terms of satisfaction with treatment, acceptance of the decision, and willingness to cooperate in the future, both among police officers and civilian respondents. At the opposite extreme, the scenario in which a sanction is applied and disrespectful behavior occurs receives the worst rating on these three dimensions. The other two scenarios receive intermediate ratings: in general, the scenario in which a sanction is applied with a respectful procedure is rated similarly to the scenario in which no sanction is applied but disrespectful treatment occurs. For the fourth dimension (the likelihood of repeating the infraction), the difference in results between the different scenarios is less pronounced.

**Figure 5.1. Average Outcomes for the Different Scenarios**



*Source:* Data compiled by authors.

Before presenting our main findings, we checked the balance among groups exposed to different vignettes regarding their sociodemographic characteristics. We tested this by using their sociodemographic traits as placebo outcomes in our primary model (see Model 1). The outcomes of this examination can be found in Table B.1 in Appendix B. Of the 40 estimated coefficients, only one was statistically significant, broadly supporting the validity of our experimental design.

Finally, we use linear regression models (presented in Section 3, Methodology) to test whether the application of a sanction and respectful treatment have an impact on the four variables of interest.<sup>8</sup> Table 5.2 presents the estimation results for civilians and police separately.

**Table 5.2. Impact of Sanction and Procedure on Perception and Attitudes, Civilians and Police**

Respondent groups	Variables	Outcomes			
		Satisfaction with treatment	Accepts decision	Future cooperation	Repeat action
Civilians	Sanction	-0.621*** (0.105)	-0.518*** (0.104)	-0.223** (0.105)	-0.229** (0.0950)
	Disrespectful treatment	-0.501*** (0.105)	-0.441*** (0.104)	-0.241** (0.105)	-0.0789 (0.0951)
	Mean (no sanction; respectful treatment)	2.489	2.511	2.426	2.074
	Fixed effect (Vignette)	Yes	Yes	Yes	Yes
	N	370	370	370	370
	R-squared	0.148	0.107	0.037	0.030
	Police officers	Sanction	-0.908*** (0.102)	-1.003*** (0.0972)	-0.337*** (0.102)
Disrespectful treatment	-1.093*** (0.102)	-0.706*** (0.0976)	-0.516*** (0.102)	-0.00635 (0.101)	
Mean (no sanction; respectful treatment)	3.253	3.089	2.747	2.266	
Fixed effect (Vignette)	Yes	Yes	Yes	Yes	
N	305	305	305	305	
R-squared	0.421	0.406	0.135	0.032	

*Source:* Data compiled by authors.

*Notes:* Each dependent variable is expressed in a Likert scale from 1 to 4 (not at all, a little, quite a lot, completely). In the first three questions, a higher value corresponds to a better evaluation of the scenario. In the fourth question (likelihood of repeating the action), a lower score corresponds to more desirable behavior (i.e., not repeating the infraction). All regressions include vignette fixed effects. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Across the four variables in the scenarios, the application of a sanction and disrespectful treatment have qualitatively equal effects for police and civilian respondents. Both civilians and police perceive that the application of a sanction and disrespectful treatment have negative effects on satisfaction with treatment, willingness to accept

<sup>8</sup> Our main specification does not include an interaction term between both treatments (short model) (Muralidharan et al., 2023). This model provides a (weighted) average of the effect of each treatment variable across the two states of the other treatment variable. Appendix C (Table C.1) presents the results of the long model (which includes the interaction term). This alternative model provides the treatment effect of each variable conditional on the baseline level of the other variable and the difference in treatment effects across states of the other variable (interaction term). Interaction terms are not statistically significant across all outcome variables.

the decision, and willingness to cooperate with the authority. In turn, both subgroups (civilians and police) consider that the application of a sanction reduces the likelihood of repeating an infraction (noise disturbance or traffic violation) and that the application of a respectful procedure does not affect this variable.

Among civilians, the application of a sanction reduces the index of satisfaction with treatment by 0.62 points (equivalent to 24.9 percent of the average value of the responses for the scenario in which the sanction is not applied and respectful treatment is offered), reduces acceptance of the decision by 0.52 points (21 percent), and reduces the willingness to cooperate by 0.23 points (11 percent). Disrespectful treatment has similar effects: it reduces satisfaction with treatment by 0.5 points (20.1 percent), reduces acceptance of the decision by 0.44 points (17.6 percent), and reduces predisposition to cooperate by 0.24 points (9.9 percent). Using the alternative specification with binary response variables (see Table D.1 in Appendix D), we find that the application of a sanction reduces the probability of a respondent being completely satisfied with the treatment by 24.5 percentage points, reduces the probability of a respondent being willing to accept the police decision by 24 percentage points, and reduces the probability of a respondent to cooperate with the police in the future by 9.8 percentage points. Finally, the application of a sanction reduces the likelihood of repeating an infraction (noise or traffic violation) by 0.23 points (11 percent of the average observed in the scenario without sanction and with good treatment; and 10.6 percentage points when using the specification with a binary dependent variable), while respectful treatment has no significant effect on this variable.

The results obtained from the responses of the civilians surveyed confirm the importance of the application of sanctions and respectful procedures for the maintenance of civic coexistence and the rule of law. We observe that the imposition of sanctions can help prevent the repetition of acts that alter civic coexistence, and respectful procedures contribute to prevent the erosion of police legitimacy.<sup>9</sup>

For police officer respondents, the results are qualitatively similar to those for civilian respondents, but with larger magnitudes (especially regarding the importance of procedural justice). The application of a sanction reduces the index of satisfaction with treatment by 0.91 points (equivalent to 27.9 percent of the average value of the responses for the scenario in which no sanction is applied and respectful treatment is offered), reduces the acceptance of the decision by 1 point (32.5 percent), and reduces the willingness to cooperate by 0.34 points (12.3 percent). Disrespectful treatment reduces satisfaction with treatment by 1.09 points (33.6 percent), reduces acceptance of the decision by 0.71 points (22.9 percent), and reduces willingness to cooperate by 0.52 points (18.8 percent). Using the alternative specification with binary response variables (see Table D.1 in Appendix D), we find that the application of a sanction reduces the probability that a respondent is largely or completely satisfied with the treatment by 30

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<sup>9</sup> Reisig et al. (2018) examined the effects of sanctions and disrespect on satisfaction with treatment and decision acceptance among a sample of U.S. students. The study's findings highlighted a pronounced influence of procedural justice on satisfaction with treatment, and a higher impact of sanctions on decision acceptance. In contrast, our study finds that the influence of these two elements on both outcomes is more balanced.

percentage points, reduces the willingness to accept the police decision by 40.4 percentage points, and reduces the willingness to cooperate with the police in the future by 15 percentage points. The application of respectful treatment during the procedure increases the satisfaction with the treatment by 43.6 percentage points, increases the acceptance of the decision by 40.4 percentage points, and increases the predisposition to cooperate by 15 percentage points. We also find that the application of a sanction reduces the likelihood of repeating the infraction (noise disturbance or traffic violation) by 0.28 points (12.4 percent of the average observed in the scenario without sanction and with good treatment; 14.1 percentage points when using the specification with binary dependent variable), while good treatment has no significant effect on this variable.

Table shows the results of the estimation of the extended model (Equation 2), which allows us to determine whether the differences in the impact of a sanction and procedural justice between police officers and civilians are statistically significant. The results show that police officers believe that the application of a sanction has a significantly greater impact on the acceptance of the decision than do civilians. Also, police officers in the study believe that respectful treatment has a greater impact on satisfaction with treatment, willingness to accept the police officer's decision, and willingness to cooperate than is the case with civilians in the study. There are no significant differences in the impact of sanctions and procedural justice on the likelihood of repeating the infraction. Results are similar using an alternative specification with binary response variables (reported in Table D.2 in Appendix D).

Overall, while both civilians and police officers in the study respond similarly in terms of the direction of effects from sanctions and disrespectful treatment, police officers tend to assign greater importance to both dimensions compared to civilians (as indicated by the significance of the interaction term in our model). These findings point to a need for managing the expectations of police officers regarding potential changes in civilians' behaviors and perceptions when these principles are applied.

**Table 5.3. Impact of Sanction and Procedure on Perception and Attitudes, Civilians and Police**

Variables	Outcomes			
	Satisfaction with treatment	Accepts decision	Future cooperation	Repeat action
Sanction	-0.620*** (0.105)	-0.517*** (0.105)	-0.223** (0.105)	-0.228** (0.0950)
Disrespectful treatment	-0.500*** (0.105)	-0.438*** (0.105)	-0.241** (0.105)	-0.0786 (0.0951)
Police	0.677*** (0.133)	0.508*** (0.134)	0.331** (0.129)	0.212* (0.122)
Sanction x Police	-0.288* (0.147)	-0.486*** (0.144)	-0.114 (0.146)	-0.0535 (0.138)
Disrespectful treatment x Police	-0.592*** (0.147)	-0.264* (0.144)	-0.275* (0.146)	0.0726 (0.138)
Mean (civilians; no sanction; respectful treatment)	2.489	2.511	2.426	2.074
Fixed effect (Vignette)	Yes	Yes	Yes	Yes
N	675	675	675	675
R-squared	0.286	0.235	0.081	0.044

*Source:* Data compiled by authors.

*Note:* Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## 6. Conclusions

The legitimacy of police institutions is a key factor in social development and the maintenance of the rule of law. The lack of legitimacy prevents police agencies from gaining the necessary cooperation from the public to deal effectively with crime. Despite its importance, legitimacy of police institutions remains elusive for many police agencies around the world.

This study examines whether procedural justice and the use of sanctions affect police legitimacy. Through a vignette experiment administered to police officers and civilians in Honduras, the study examines how the application or nonapplication of a sanction and the quality of procedural treatment affect the respondents' satisfaction with the treatment by police, acceptance of the police decision, willingness to cooperate in the future, and likelihood of repeating an infraction.

The study contributes to the literature on procedural justice and police legitimacy in at least three ways. First, it provides evidence of the importance of procedural justice in building police legitimacy in low- and middle-income countries and high-crime contexts. In general, studies on the topic of procedural justice and police legitimacy have been conducted in high-income countries, which in many cases face very different challenges to coexistence and citizen security than low- and middle-income countries,

limiting the generalizability of their findings. However, the positive results of the application of procedural justice principles in high-income countries were replicated in this study in a lower-middle-income country with a high crime rate, highlighting the value of the quality of police–citizen interactions also in these contexts.

Second, this study examines the relationship between sanctions and respectful procedures in the construction of police legitimacy and civic coexistence, a relationship that has been scarcely explored in the literature. Civilian and police respondents in the study perceive that both a sanction and a disrespectful procedure reduce satisfaction with treatment from police, willingness to accept the police decision, and willingness to cooperate with the authority, but only sanctions are effective to reduce the likelihood of repeating an infraction.

Third, this study provides evidence of the similarities and differences in the evaluation of sanctions and procedural justice between police and civilians. In contrast to most of the evidence from high-income countries, in the context of this study, police officers overestimate the impact of applying procedural justice principles. Despite this difference, the study confirms that there is both public demand for respectful procedures and police recognition of their importance, which are fundamental conditions for the effective and sustained application of procedural justice protocols.

The results align with existing studies that highlight the positive effects of procedural justice on attitudinal outcomes, such as satisfaction with the treatment and decision acceptance (Nivette et al., 2024). They further illustrate that imposing a sanction negatively impacts these dimensions. Crucially, the study sheds light on the interplay between sanctions, procedural justice, and behavioral outcomes, an area less explored in prior research (Nagin and Telep, 2020). While sanctions seem effective in reducing the willingness of individuals to repeat infractions, respectful treatment does not show a significant impact in this dimension. However, as Nagin and Telep (2020) note, the potentially nuanced impact of procedural justice on legal compliance should not undermine its importance in discussions about effective policing. This study supports this view, emphasizing the benefits of respectful treatment as a way to prevent sanctions from eroding satisfaction with police, decision acceptance, and willingness to cooperate with the police.

The study provides evidence of the importance of procedural justice for building police legitimacy, even in contexts of high crime and complex citizen security challenges, and shows that both civilians and police officers recognize this importance. The findings also demonstrate the importance of both sanctions and respectful procedures in maintaining civic coexistence and the rule of law. The imposition of sanctions helps to prevent the repetition of actions that alter civic coexistence. The application of sanctions through respectful procedures prevents sanctions from undermining the legitimacy of the police.

This study, as is the case with most experimental surveys, faces some limitations worth acknowledging. While we strived for realism in the scenarios to enhance external validity, it is unclear how the findings mirror those that would be obtained in real-world

situations. In general, respondents might react differently in survey settings compared to how they react in real life. Furthermore, as in many studies using vignettes (Nivette et al., 2024), the vignettes in the study presented a clear contrast between respectful and disrespectful treatment. While the respectful treatment is mostly neutral and could be likened to “business-as-usual,” the scenario of disrespect was quite extreme, which, although informative, might not help to capture the impact of more subtle, yet frequent, interactions with police officers typical of real-world encounters.

In terms of the methodology, despite utilizing random assignment of scenarios with different attributes, drawing definitive causal inferences remains challenging. As Nivette et al. (2024) explain, manipulating specific attributes might inadvertently alter broader background beliefs about the scenario. This poses a risk of violating the excludability assumption, where the causal effect would be expected to be attributed solely to the treatment, not influenced by other factors. The study mitigated this risk by avoiding the use of “you” in the scenarios and defining the scenarios in the third person with a male police officer and male civilian. The use of “you” might exacerbate varied interpretations depending on the respondent's characteristics, such as ethnicity, gender, or past experiences.

The experiment focused on two specific scenarios, which might not generalize across different settings. While we believe the two scenarios capture relative standard and generalizable interactions between police and civilians, future research would benefit from testing a broader spectrum of interactions, ranging from the mundane to the extreme.

In conclusion, while we believe our findings provide valuable insights into the role of procedural justice and sanctions in shaping attitudinal and behavioral outcomes among civilians, these caveats emphasize the need for cautious interpretation.



## References

- Abril, V., et al. 2023. Building Trust in State Actors: A Multi-Site Experiment with the Colombian National Police. IDB Technical Note IDB-TN-2790. Washington, DC: Inter-American Development Bank. Available at <https://publications.iadb.org/publications/english/document/Building-Trust-in-State-Actors-A-Multi-Site-Experiment-with-the-Colombian-National-Police.pdf>.
- Akinlabi, O. M. 2017. Young People, Procedural Justice and Police Legitimacy in Nigeria. *Policing and Society* 27(4), 419–38. Available at <https://doi.org/10.1080/10439463.2015.1077836>.
- Albin, C., and D. Druckman. 2012. Equality Matters: Negotiating an End to Civil Wars. *Journal of Conflict Resolution* 56(2), 155–82. Available at <https://doi.org/10.1177/0022002711431798>.
- Alexander, C. S., and H. J. Becker. 1978. The Use of Vignettes in Survey Research. *Public Opinion Quarterly* 42(1), 93–104. Available at <https://doi.org/10.1086/268432>.
- Anrango Narváez, D., J. E. Medina Sarmiento, and C. Del-Real. 2023. Why Do People Legitimize and Cooperate With the Police? Results of a Randomized Control Trial on the Effects of Procedural Justice in Quito, Ecuador. *Crime Science* 12(1), 9. Available at <https://doi.org/10.1186/s40163-023-00188-1>.
- Antrobus, E., I. Thompson, and B. Ariel. 2019. Procedural Justice Training for Police Recruits: Results of a Randomized Controlled Trial. *Journal of Experimental Criminology* 15(1), 29–53. Available at <https://doi.org/10.1007/s11292-018-9331-9>.
- Arriagada, I., and L. Godoy. 1999. Seguridad ciudadana y violencia en América Latina: Diagnóstico y políticas en los años noventa. Available at <https://repositorio.cepal.org/server/api/core/bitstreams/0649aeaf-1e25-4bf2-b82e-f2120a025b25/content>.
- Ayres, R. 1998. Crime and Violence as Development Issues in Latin America and the Caribbean. Washington, DC: World Bank Group. Available at <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/385501468742891106/crime-and-violence-as-development-issues-in-latin-america-and-the-caribbean>.
- Barkworth, J. M., and K. Murphy. 2015. Procedural Justice Policing and Citizen Compliance Behaviour: The Importance of Emotion. *Psychology, Crime and Law* 21(3), 254–73. Available at <https://doi.org/10.1080/1068316X.2014.951649>.
- Bates, L. J., E. Antrobus, S. Bennett, and P. Martin. 2015. Comparing Police and Public Perceptions of a Routine Traffic Encounter. *Police Quarterly* 18(4), 442–68. Available at <https://doi.org/10.1177/1098611115589290>.
- Bobocel, D. R., and L. Gosse. 2015. Procedural Justice. In R. S. Cropanzano and M. L. Ambrose (eds), *The Oxford Handbook of Justice in the Workplace*. Oxford:

- Oxford University Press. Available at <https://doi.org/10.1093/oxfordhb/9780199981410.013.3>.
- Bowen, D. E., S. W. Gilliland, and R. Folger. 1999. HRM and Service Fairness: How Being Fair With Employees Spills Over to Customers. *Organizational Dynamics* 27(3), 7-23. Available at [https://doi.org/10.1016/S0090-2616\(99\)90018-9](https://doi.org/10.1016/S0090-2616(99)90018-9).
- Bradford, B. 2014. Policing and Social Identity: Procedural Justice, Inclusion and Cooperation Between Police and Public. *Policing and Society* 24(1), 22-43. Available at <https://doi.org/10.1080/10439463.2012.724068>.
- Bradford, B., A. Huq, J. Jackson, and B. Roberts. 2014. What Price Fairness When Security Is at Stake? Police Legitimacy in South Africa: Police Legitimacy in South Africa. *Regulation and Governance* 8(2), 246-68. Available at <https://doi.org/10.1111/rego.12012>.
- Bradford, B., J. Jackson., and E. A. Stanko. 2009. Contact and Confidence: Revisiting the Impact of Public Encounters With the Police. *Policing and Society* 19(1), 20-46. Available at <https://doi.org/10.1080/10439460802457594>.
- Brown, K. L., and M. D. Reisig. 2019. Procedural Injustice, Police Legitimacy, and Officer Gender: A Vignette-Based Test of the Invariance Thesis. *Behavioral Sciences and the Law* 37(6), 696-710. Available at <https://doi.org/10.1002/bsl.2439>.
- Cloutier, J., and L. Vilhuber. 2008. Procedural Justice Criteria in Salary Determination. *Journal of Managerial Psychology* 23(6), 713-740. Available at <https://doi.org/10.1108/02683940810894765>.
- Cohen-Charash, Y., and P. E. Spector. 2001. The Role of Justice in Organizations: A Meta-Analysis. *Organizational Behavior and Human Decision Processes* 86(2), 278-321. Available at <https://doi.org/10.1006/obhd.2001.2958>.
- Colquitt, J. A. 2004. Does the Justice of the One Interact With the Justice of the Many? Reactions to Procedural Justice in Teams. *Journal of Applied Psychology* 89(4), 633-46. Available at <https://doi.org/10.1037/0021-9010.89.4.633>.
- Dai, M. 2021. Training Police for Procedural Justice: An Evaluation of Officer Attitudes, Citizen Attitudes, and Police-Civilian Interactions. *The Police Journal: Theory, Practice and Principles* 94(4), 481-95. Available at <https://doi.org/10.1177/0032258X20960791>.
- De Clercq, D., and R. Pereira. 2020. Knowledge-Sharing Efforts and Employee Creative Behavior: The Invigorating Roles of Passion for Work, Time Sufficiency and Procedural Justice. *Journal of Knowledge Management* 24(5), 1131-55. Available at <https://doi.org/10.1108/JKM-06-2019-0274>.
- Donner, C., J. Maskaly, L. Fridell, and W. G. Jennings. 2015. Policing and Procedural Justice: A State-of-the-Art Review. *Policing: An International Journal of Police Strategies and Management* 38(1), 153-72. Available at <https://doi.org/10.1108/PIJPSM-12-2014-0129>.

- Druckman, D., and L. Wagner. 2019. Justice Matters: Peace Negotiations, Stable Agreements, and Durable Peace. *Journal of Conflict Resolution* 63(2), 287–316. Available at <https://doi.org/10.1177/0022002717739088>.
- Esaiasson, P. 2010. Will Civilians Take No for an Answer? What Government Officials Can Do to Enhance Decision Acceptance. *European Political Science Review* 2(3), 351–71. Available at <https://doi.org/10.1017/S1755773910000238>.
- Fildes, A., K. Murphy, and L. Porter. 2019. Police Officer Procedural Justice Self-Assessments: Do They Change Across Recruit Training and Operational Experience? *Policing and Society* 29(2), 188–203. Available at <https://doi.org/10.1080/10439463.2017.1290089>.
- Folger, R. 1987. Distributive and Procedural Justice in the Workplace. *Social Justice Research* 1(2), 143–59. Available at <https://doi.org/10.1007/BF01048013>.
- Friman, R. 2009. *Crime and the Global Political Economy*. Boulder, CO: Lynne Rienner Publishers.
- Gallup. (2022). Global Law and Order Report. Accessed October 14, 2023. Available at: <https://www.gallup.com/analytics/356963/gallup-global-law-and-order-report.aspx>.
- Gelbrich, K., and H. Roschk. 2011. A Meta-Analysis of Organizational Complaint Handling and Customer Responses. *Journal of Service Research* 14(1), 24–43. Available at <https://doi.org/10.1177/1094670510387914>.
- Girgenti-Malone, A. A., C. Khoder, G. Vega, and D. Castillo. 2017. College Students' Perceptions of Police Use of Force: Do Suspect Race and Ethnicity Matter? *Police Practice and Research* 18(5), 492–506. Available at <https://doi.org/10.1080/15614263.2017.1295244>.
- Gobena, L. B., and M. Van Dijke. 2017. Fear and Caring: Procedural Justice, Trust, and Collective Identification as Antecedents of Voluntary Tax Compliance. *Journal of Economic Psychology* 62, 1–16. Available at <https://doi.org/10.1016/j.joep.2017.05.005>.
- Greene, J. R., and S. H. Decker. 1989. Police and Community Perceptions of the Community Role in Policing: The Philadelphia Experience. *The Howard Journal of Criminal Justice* 28(2), 105–23. Available at <https://doi.org/10.1111/j.1468-2311.1989.tb00641.x>.
- Grillos, T., A. Zarychta, and J. Nelson Nuñez. 2021. Water Scarcity and Procedural Justice in Honduras: Community-Based Management Meets Market-Based Policy. *World Development* 142, 105451. Available at <https://doi.org/10.1016/j.worlddev.2021.105451>.
- Hinds, L., and K. Murphy. 2007. Public Satisfaction With Police: Using Procedural Justice to Improve Police Legitimacy. *Australian and New Zealand Journal of Criminology* 40(1), 27–42. Available at <https://doi.org/10.1375/acri.40.1.27>.

- Honduras, Instituto Nacional de Estadística (INE). 2019. Encuesta Permanente de Hogares de Propósitos Múltiples, 2019. Available at <https://ine.gob.hn/v4/ephpm/>.
- Jackson, J., and B. Bradford. 2010. Police Legitimacy: A Conceptual Review. *SSRN Electronic Journal*. Available at <https://doi.org/10.2139/ssrn.1684507>.
- Jackson, J., et al . 2012. Why Do People Comply With the Law?: Legitimacy and the Influence of Legal Institutions. *British Journal of Criminology* 52(6), 1051-71. Available at <https://doi.org/10.1093/bjc/azs032>.
- Johnson, D., E. R. Maguire, and J. B. Kuhns. 2014. Public Perceptions of the Legitimacy of the Law and Legal Authorities: Evidence From the Caribbean. *Law and Society Review* 48(4), 947-78. Available at <https://doi.org/10.1111/lasr.12102>.
- Johnson, D., D. B. Wilson, E. R. Maguire, and B. V. Lowrey-Kinberg. 2017. Race and Perceptions of Police: Experimental Results on the Impact of Procedural (In)Justice. *Justice Quarterly* 34(7), 1184-1212. Available at <https://doi.org/10.1080/07418825.2017.1343862>.
- Karam, E. P., et al . 2019. Illuminating the “Face” of Justice: A Meta-Analytic Examination of Leadership and Organizational Justice. *Journal of Management Studies* 56(1), 134-71. Available at <https://doi.org/10.1111/joms.12402>.
- Kochel, T. R., R. Parks, and S. D. Mastrofski. 2013. Examining Police Effectiveness as a Precursor to Legitimacy and Cooperation with Police. *Justice Quarterly* 30(5), 895-925. Available at <https://doi.org/10.1080/07418825.2011.633544>.
- Kutnjak Ivković, S., and W. Kang. 2012. Police Integrity in South Korea. *Policing: An International Journal of Police Strategies and Management* 35(1), 76103. Available at <https://doi.org/10.1108/13639511211215469>.
- Lafree, G. 2007. Expanding Criminology’s Domain: The American Society of Criminology 2006 Presidential Address. *Criminology* 45(1), 1-31. Available at <https://doi.org/10.1111/j.1745-9125.2007.00070.x>.
- Lawrence, R. L., S. E. Daniels, and G. H. Stankey. 1997. Procedural Justice and Public Involvement in Natural Resource Decision Making. *Society and Natural Resources* 10(6), 577-89. Available at <https://doi.org/10.1080/08941929709381054>.
- Liederbach, J., E. J. Fritsch, D. L. Carter, and A. Bannister. 2008. Exploring the Limits of Collaboration in Community Policing: A Direct Comparison of Police and Citizen Views. *Policing: An International Journal of Police Strategies and Management* 31(2), 271-91. Available at <https://doi.org/10.1108/13639510810878721>.
- Lind, E. A., and T. R. Tyler. 1988. *The Social Psychology of Procedural Justice*. New York: Springer US. Available at <https://doi.org/10.1007/978-1-4899-2115-4>.
- Lowrey, B. V., E. R. Maguire, and R. R. Bennett. 2016. Testing the Effects of Procedural Justice and Overaccommodation in Traffic Stops: A Randomized Experiment.

- Criminal Justice and Behavior* 43(10), 1430–49. Available at <https://doi.org/10.1177/0093854816639330>.
- MacQueen, S., and B. Bradford. 2015. Enhancing Public Trust and Police Legitimacy During Road Traffic Encounters: Results From a Randomised Controlled Trial in Scotland. *Journal of Experimental Criminology* 11(3), 419–43. Available at <https://doi.org/10.1007/s11292-015-9240-0>.
- MacQueen, S., and B. Bradford. 2017. Where Did It All Go Wrong? Implementation Failure—and More—in a Field Experiment of Procedural Justice Policing. *Journal of Experimental Criminology* 13(3), 321–45. Available at <https://doi.org/10.1007/s11292-016-9278-7>.
- Maguire, E. R., B. V. Lowrey, and D. Johnson. 2017. Evaluating the Relative Impact of Positive and Negative Encounters With Police: A Randomized Experiment. *Journal of Experimental Criminology* 13(3), 367–91. Available at <https://doi.org/10.1007/s11292-016-9276-9>.
- Mazerolle, L., et al. 2013. Procedural Justice and Police Legitimacy: A Systematic Review of the Research Evidence. *Journal of Experimental Criminology* 9(3), 245–74. Available at <https://doi.org/10.1007/s11292-013-9175-2>.
- Mazerolle, L., S. Bennett, E. Antrobus, and E. Eggins. 2012. Procedural Justice, Routine Encounters and Citizen Perceptions of Police: Main Findings From the Queensland Community Engagement Trial (QCET). *Journal of Experimental Criminology* 8(4), 343–67. Available at <https://doi.org/10.1007/s11292-012-9160-1>.
- Mazerolle, L., and W. Terrill. 2018. Making Every Civilian–Police Interaction Count: The Challenges of Building a Better Cop. *Criminology and Public Policy* 17(1), 8996. Available at <https://doi.org/10.1111/1745-9133.12340>.
- McLaren, D. P. 2012. Procedural Justice in Carbon Capture and Storage. *Energy and Environment* 23(2–3), 345–65. Available at <https://doi.org/10.1260/0958-305X.23.2-3.345>.
- Muralidharan, K., M. Romero, and K. Wüthrich. 2023. Factorial Designs, Model Selection, and (Incorrect) Inference in Randomized Experiments. *The Review of Economics and Statistics* 1–44. Available at [https://doi.org/10.1162/rest\\_a\\_01317](https://doi.org/10.1162/rest_a_01317).
- Murphy, K. 2005. Regulating More Effectively: The Relationship Between Procedural Justice, Legitimacy, and Tax Non-Compliance. *Journal of Law and Society* 32(4), 562–89. Available at <https://doi.org/10.1111/j.1467-6478.2005.00338.x>.
- Murphy, K., L. Hinds, and J. Fleming. 2008. Encouraging Public Cooperation and Support for Police. *Policing and Society* 18(2), 136–55. Available at <https://doi.org/10.1080/10439460802008660>.
- Murphy, K., L. Mazerolle, and S. Bennett. 2014. Promoting Trust in Police: Findings From a Randomised Experimental Field Trial of Procedural Justice Policing. *Policing*

- and Society* 24(4), 405–24. Available at <https://doi.org/10.1080/10439463.2013.862246>.
- Nagin, D. S., and C. W. Telep. 2020. Procedural Justice and Legal Compliance: A Revisionist Perspective. *Criminology and Public Policy* 19(3), 761–86. Available at <https://doi.org/10.1111/1745-9133.12499>.
- Nalla, M. K., G. Meško, and M. Modic. 2018. Assessing Police–Community Relationships: Is There a Gap in Perceptions Between Police Officers and Residents? *Policing and Society* 28(3), 271–90. Available at <https://doi.org/10.1080/10439463.2016.1147564>.
- Nivette, A. E., and T. D. Akoensi. 2019. Determinants of Satisfaction With Police in a Developing Country: A Randomised Vignette Study. *Policing and Society* 29(4), 471–87. Available at <https://doi.org/10.1080/10439463.2017.1380643>.
- Nivette, A., C. Nägel, and A. Stan. 2024. The Use of Experimental Vignettes in Studying Police Procedural Justice: A Systematic Review. *Journal of Experimental Criminology* 20, 151–86.
- Nix, J. 2017. Do the Police Believe That Legitimacy Promotes Cooperation From the Public? *Crime and Delinquency* 63(8), 951–75. Available at <https://doi.org/10.1177/0011128715597696>.
- Nix, J., J. T. Pickett, S. E. Wolfe, and B. A. Campbell. 2017. Demeanor, Race, and Police Perceptions of Procedural Justice: Evidence from Two Randomized Experiments. *Justice Quarterly* 34(7), 1154–83. Available at <https://doi.org/10.1080/07418825.2017.1334808>.
- Orsingher, C., S. Valentini, and M. de Angelis. 2010. A Meta-Analysis of Satisfaction With Complaint Handling in Services. *Journal of the Academy of Marketing Science* 38(2), 169–86. Available at <https://doi.org/10.1007/s11747-009-0155-z>.
- Paternoster, R., R. Bachman, R. Brame, and L. W. Sherman. 1997. Do Fair Procedures Matter? The Effect of Procedural Justice on Spouse Assault. *Law and Society Review* 31(1), 163. Available at <https://doi.org/10.2307/3054098>.
- Phillips, S. W. 2009. Using a Vignette Research Design to Examine Traffic Stop Decision Making of Police Officers: A Research Note. *Criminal Justice Policy Review* 20(4), 495–506. Available at <https://doi.org/10.1177/0887403409333070>.
- . 2010. Police Officers' Opinions of the Use of Unnecessary Force by Other Officers. *Police Practice and Research* 11(3), 197–210. Available at <https://doi.org/10.1080/15614260902830054>.
- . 2020. The Formation of Suspicion: A Vignette Study. *International Journal of Police Science and Management* 22(3), 274–84. Available at <https://doi.org/10.1177/1461355720929038>.

- Reisig, M. D., R. D. Mays, and C. W. Telep. 2018. The Effects of Procedural Injustice During Police–Citizen Encounters: A Factorial Vignette Study. *Journal of Experimental Criminology* 14(1), 49–58. Available at <https://doi.org/10.1007/s11292-017-9307-1>.
- Rosenbaum, D. P., et al. 2017. The Police–Community Interaction Survey: Measuring Police Performance in New Ways. *Policing: An International Journal of Police Strategies and Management* 40(1), 112–27. Available at <https://doi.org/10.1108/PIJPSM-07-2016-0119>.
- Rosenbaum, D. P., and D. S. Lawrence 2017. Teaching Procedural Justice and Communication Skills During Police–Community Encounters: Results of a Randomized Control Trial With Police Recruits. *Journal of Experimental Criminology* 13(3), 293–319. Available at <https://doi.org/10.1007/s11292-017-9293-3>.
- Rubin, E. V. 2007. The Role of Procedural Justice in Public Personnel Management: Empirical Results From the Department of Defense. *Journal of Public Administration Research and Theory*, 19(1), 125–43. Available at <https://doi.org/10.1093/jopart/mum035>.
- Sahin, N., A. A. Braga, R. Apel, and R. K. Brunson. 2017. The Impact of Procedurally-Just Policing on Citizen Perceptions of Police During Traffic Stops: The Adana Randomized Controlled Trial. *Journal of Quantitative Criminology* 33(4), 701–26. Available at <https://doi.org/10.1007/s10940-016-9308-7>.
- Skogan, W. G., M. Van Craen, and C. Hennessy. 2015. Training Police for Procedural Justice. *Journal of Experimental Criminology* 11(3), 319–34. Available at <https://doi.org/10.1007/s11292-014-9223-6>.
- Solomon, S. J. 2019. How Do the Components of Procedural Justice and Driver Race Influence Encounter-Specific Perceptions of Police Legitimacy During Traffic Stops? *Criminal Justice and Behavior* 46(8), 1200–16. Available at <https://doi.org/10.1177/0093854819859606>.
- Son, I. S., M. S. Davis, and D. M. Rome. 1998. Race and Its Effect on Police Officers' Perceptions of Misconduct. *Journal of Criminal Justice* 26(1), 21–8. Available at [https://doi.org/10.1016/S0047-2352\(97\)00051-2](https://doi.org/10.1016/S0047-2352(97)00051-2).
- Sunshine, J., and T. R. Tyler. 2003. The Role of Procedural Justice and Legitimacy in Shaping Public Support for Policing. *Law & Society Review* 37(3), 513–48. Available at <https://doi.org/10.1111/1540-5893.3703002>.
- Sweeney, P. D., and D. B. McFarlin. 1993. Workers' Evaluations of the "Ends" and the "Means": An Examination of Four Models of Distributive and Procedural Justice. *Organizational Behavior and Human Decision Processes* 55(1), 23–40. Available at <https://doi.org/10.1006/obhd.1993.1022>.

- Tankebe, J. 2009. Public Cooperation With the Police in Ghana: Does Procedural Fairness Matter? *Criminology* 47(4), 1265–93. Available at <https://doi.org/10.1111/j.1745-9125.2009.00175.x>.
- Thibaut, J. W., and L. Walker. 1975. *Procedural Justice: A Psychological Analysis*. Hillsdale, NJ: L. Erlbaum Associates; distributed by the Halsted Press Division of Wiley.
- Thorpe, J. 2018. Procedural Justice in Value Chains Through Public–Private Partnerships. *World Development* 103, 162–75. Available at <https://doi.org/10.1016/j.worlddev.2017.10.004>.
- Trojanowicz, R. C. 1972. Police–Community Relations Problems and Process. *Criminology* 9(4), 401–23. Available at <https://doi.org/10.1111/j.1745-9125.1972.tb00780.x>.
- Tyler, T. R. 1987. Procedural Justice Research. *Social Justice Research* 1(1), 41–65. Available at <https://doi.org/10.1007/BF01049383>.
- . 1997. The Psychology of Legitimacy: A Relational Perspective on Voluntary Deference to Authorities. *Personality and Social Psychology Review* 1(4), 323–45. Available at [https://doi.org/10.1207/s15327957pspr0104\\_4](https://doi.org/10.1207/s15327957pspr0104_4).
- . 2003. Procedural Justice, Legitimacy, and the Effective Rule of Law. *Crime and Justice* 30, 283–357. Available at <https://doi.org/10.1086/652233>.
- . 2006. *Why People Obey the Law*. Princeton, NJ: Princeton University Press.
- Tyler, T. R., and A. Caine. 1981. The Influence of Outcomes and Procedures on Satisfaction With Formal Leaders. *Journal of Personality and Social Psychology* 41(4), 642–55. Available at <https://doi.org/10.1037/0022-3514.41.4.642>.
- Tyler, T. R., and Y. J. Huo. 2002. *Trust in the Law: Encouraging Public Cooperation With the Police and Courts*. New York: Russell Sage Foundation.
- UNODC (United Nations Office on Drugs and Crime). 2023. UNODC Data Portal. Victims of Intentional Homicides. Accessed October 17, 2023. Available at: <https://dataunodc.un.org/dp-intentional-homicide-victims-est>.
- Wenzel, M. 2006. A Letter From the Tax Office: Compliance Effects of Informational and Interpersonal Justice. *Social Justice Research* 19(3), 345–64. Available at <https://doi.org/10.1007/s11211-006-0011-y>.
- Wheller, L., P. Quinton, A. Fildes, and A. Mills. 2013. *The Greater Manchester Police Procedural Justice Training Experiment: The Impact of Communication Skills Training on Officers and Victims of Crime*. London: College of Policing.
- Wood, G., T. R. Tyler, and A. V. Papachristos. 2020. Procedural Justice Training Reduces Police Use of Force and Complaints Against Officers. *PNAS, Proceedings of the National Academy of Sciences* 117(18), 9815–21. Available at <https://doi.org/10.1073/pnas.1920671117>.



- Wutich, A., M. Beresford, and C. Carvajal. 2016. Can Informal Water Vendors Deliver on the Promise of a Human Right to Water? Results From Cochabamba, Bolivia. *World Development* 79, 14–24. Available at <https://doi.org/10.1016/j.worlddev.2015.10.043>.
- Zapata-Phelan, C. P., J. A. Colquitt, B. A. Scott, and B. Livingston. 2009. Procedural Justice, Interactional Justice, and Task Performance: The Mediating Role of Intrinsic Motivation. *Organizational Behavior and Human Decision Processes* 108(1), 93–105. Available at <https://doi.org/10.1016/j.obhdp.2008.08.001>.
- Zhao, A., and P. Ding. 2022. Regression-Based Causal Inference With Factorial Experiments: Estimands, Model Specifications and Design-Based Properties. *Biometrika* 109(3), 799–815.

## Appendixes

### Appendix A. Vignettes Used in the Study

#### Vignette 1. Noise at a Party

##### *ORIGINAL VERSION - SPANISH*

##### *Trato justo y sanción*

Carlos decidió organizar una fiesta en su casa. En la fiesta todos los invitados se divierten hasta que alguien golpea la puerta. Carlos baja el volumen de la música y al abrir la puerta se da cuenta de que se trataba de un policía. El policía le dice "Buenas noches, estoy aquí porque recibimos una queja por ruido de uno de sus vecinos. Necesito hablar con el dueño de la casa por un momento". Después de hablar con el policía por algunos minutos sobre la queja y el motivo de la fiesta, el policía le dijo a Carlos "Sus invitados deben salir del apartamento inmediatamente" y le impuso una multa por violar la ordenanza local de ruido.

##### *Trato justo y no sanción*

Carlos decidió organizar una fiesta en su casa. En la fiesta todos los invitados se divierten hasta que alguien golpea la puerta. Carlos baja el volumen de la música y al abrir la puerta se da cuenta de que se trataba de un policía. El policía le dice "Buenas noches, estoy aquí porque recibimos una queja por ruido de uno de sus vecinos. Necesito hablar con el dueño de la casa por un momento". Después de hablar con el policía por algunos minutos sobre la queja y el motivo de la fiesta, el policía le dijo a Carlos que no va a interrumpir la fiesta siempre que mantengan el volumen bajo.

##### *Trato injusto y sanción*

Carlos decidió organizar una fiesta en su casa. En la fiesta todos los invitados se divierten hasta que alguien golpea la puerta. Carlos baja el volumen de la música y al abrir la puerta se da cuenta de que se trataba de un policía. El policía le dice "¡Abra la puerta ahora! Hemos recibido la queja de uno de sus vecinos sobre la bulla que está haciendo. ¡Es increíble que desde el estacionamiento se pueda escuchar su música de mierda! ¿Están todos sordos?" Después de hablar con el policía por algunos minutos sobre la queja y el motivo de la fiesta, el policía le dijo a Carlos "Sus invitados deben salir del apartamento inmediatamente" y le impuso una multa por violar la ordenanza local de ruido.

##### *Trato injusto y no sanción*

Carlos decidió organizar una fiesta en su casa. En la fiesta todos los invitados se divierten hasta que alguien golpea la puerta. Carlos baja el volumen de la música y al abrir la puerta se da cuenta de que se trataba de un policía. El policía le dice "¡Abra la

puerta ahora! Hemos recibido la queja de uno de sus vecinos sobre la bulla que está haciendo. ¡Es increíble que desde el estacionamiento se pueda escuchar su música de mierda! ¿Están todos sordos?”. Después de hablar con el policía por algunos minutos sobre la queja y el motivo de la fiesta, el policía le dijo a Carlos que no va a interrumpir la fiesta siempre que mantengan el volumen bajo.

#### *TRANSLATED VERSION - ENGLISH*

##### *Respectful treatment and sanction*

Carlos decided to organize a party at his house. At the party, all the guests are having a good time until someone knocks on the door. Carlos turns down the music and when he opens the door he realizes that it is a police officer. The officer says, “Good evening, I am here because we received a noise complaint from one of your neighbors. I need to speak with the homeowner for a moment.” After they talk for a few minutes about the complaint and the reason for the party, the officer told Carlos, “Your guests must leave the apartment immediately,” and he issued Carlos a ticket for violating the local noise ordinance.

##### *Respectful treatment and no sanction*

Carlos decided to organize a party at his house. At the party, all the guests are having a good time until someone knocks on the door. Carlos turns down the music and when he opens the door he realizes that it is a police officer. The officer says, “Good evening, I am here because we received a noise complaint from one of your neighbors. I need to speak with the homeowner for a moment.” After they talk for a few minutes about the complaint and the reason for the party, the officer told Carlos that he will not interrupt the party as long as they keep the volume down.

##### *Disrespectful treatment and sanction*

Carlos decided to organize a party at his house. At the party, all the guests are having a good time until someone knocks on the door. Carlos turns down the music and when he opens the door he realizes that it is a police officer. The officer says, “Open the door now! We have received a complaint from one of your neighbors about the noise you are making; it’s unbelievable that from the parking lot you can hear your crappy music! Are you all deaf?” After they talk for a few minutes about the complaint and the reason for the party, the officer told Carlos, “Your guests must leave the apartment immediately,” and he issued Carlos a ticket for violating the local noise ordinance.

##### *Disrespectful treatment and no sanction*

Carlos decided to organize a party at his house. At the party, all the guests are having a good time until someone knocks on the door. Carlos turns down the music and when he opens the door he realizes that it is a police officer. The officer says, “Open

the door now! We have received a complaint from one of your neighbors about the noise you are making; it's unbelievable that from the parking lot you can hear your crappy music! Are you all deaf?" After they talk for a few minutes about the complaint and the reason for the party, the officer told Carlos that he will not interrupt the party as long as they keep the volume down.

## Vignette 2. Transit Stop

### ORIGINAL VERSION - SPANISH

#### *Trato respetuoso y sanción*

Carlos se encuentra manejando por un camino desconocido y ve que una patrulla de policía está atrás suyo con luces intermitentes. Al notar esto, Carlos se detiene. El policía también lo hace, sale y se acerca a su auto. Parado del otro lado de la ventana, el oficial le dice: "Buenas noches, le he detenido porque se pasó una señal de "ALTO" a unas calles de aquí ¿Me puede dar su licencia y el documento de propiedad del vehículo, por favor?". Carlos le entrega lo solicitado por el policía y él se va a la patrulla. Después de unos minutos vuelve y dice "Le estoy poniendo una multa. Puede pagarlo en línea o enviarlo por correo. O si desea anularlo asegúrese de marcar la casilla de "No culpable" y le enviarán por correo su fecha de comparecencia".

#### *Trato respetuoso y no sanción*

Carlos se encuentra manejando por un camino desconocido y ve que una patrulla de policía está atrás suyo con luces intermitentes. Al notar esto, Carlos se detiene. El policía también lo hace, sale y se acerca a su auto. Parado del otro lado de la ventana, el oficial le dice: "Buenas noches, le he detenido porque se pasó una señal de "ALTO" a unas calles de aquí ¿Me puede dar su licencia y el documento de propiedad del vehículo, por favor?". Carlos le entrega lo solicitado por el policía y él se va a la patrulla. Después de unos minutos vuelve y dice que no va a imponerle una multa, pero le pide que tenga cuidado de no pasar por ninguna señal de "ALTO" en el futuro.

#### *Trato irrespetuoso y sanción*

Carlos se encuentra manejando por un camino desconocido y ve que una patrulla de policía está atrás suyo con luces intermitentes. Al notar esto, Carlos se detiene. El policía también lo hace, sale y se acerca a su auto. Parado del otro lado de la ventana, el oficial le dice: "¿Por qué se pasó esa señal de "ALTO"? ¿Tiene alguna puta idea de lo peligroso que es eso? ¿La tiene? Podría haber herido seriamente a alguien. Antes de que me dé sus excusas, saque su licencia y el documento de propiedad del auto. Necesito verlo". Carlos le entrega lo solicitado al policía y él se va a la patrulla. Después de unos minutos vuelve y dice "Le estoy poniendo una multa. Puede pagarlo en línea o enviarlo por correo. O si desea anularlo asegúrese de marcar la casilla de "No culpable" y le enviarán por correo su fecha de comparecencia".

### *Trato irrespetuoso y no sanción*

Carlos se encuentra manejando por un camino desconocido y ve que una patrulla de policía está atrás suyo con luces intermitentes. Al notar esto, Carlos se detiene. El policía también lo hace, sale y se acerca a su auto. Parado del otro lado de la ventana, el oficial le dice: “¿Por qué se pasó esa señal de “ALTO”? ¿Tiene alguna puta idea de lo peligroso que es eso? ¿La tiene? Podría haber herido seriamente a alguien. Antes de que me dé sus excusas, saque su licencia y el documento de propiedad del auto. Necesito verlo”. Carlos le entrega lo solicitado por el policía y él se va a la patrulla. Después de unos minutos vuelve y dice que no va a imponerle una multa, pero le pide que tenga cuidado de no pasar por ninguna señal de “ALTO” en el futuro.

### *TRANSLATED VERSION - ENGLISH*

#### *Respectful treatment and sanction*

Carlos is driving down an unfamiliar road and sees a police car behind him with flashing lights. Noticing this, Carlos pulls over. The police officer does too, gets out, and approaches Carlos’s car. Standing on the other side of the window, the officer says: “Good evening, I have stopped you because you ran a ‘STOP’ sign a few blocks from here. Can I have your license and vehicle ownership document, please?” Carlos hands the officer what he had asked for and the officer goes to the patrol car. After a few minutes the officer comes back and says: “I’m giving you a ticket. You can pay it online or mail it in. Or, if you want to cancel it, be sure to check the ‘Not Guilty’ box and they will mail you your court appearance date.”

#### *Respectful treatment and no sanctions*

Carlos is driving down an unfamiliar road and sees a police car behind him with flashing lights. Noticing this, Carlos pulls over. The police officer does too, gets out, and approaches Carlos’s car. Standing on the other side of the window, the officer says, “Good evening, I have stopped you because you ran a ‘STOP’ sign a few blocks from here. Can I have your license and vehicle ownership document, please?” Carlos hands the officer what he had asked for and the officer goes to the patrol car. After a few minutes, the officer returns and says that he is not going to give Carlos a ticket, but asks Carlos to be careful not to run any “STOP” signs in the future.

#### *Disrespectful treatment and sanction*

Carlos is driving down an unfamiliar road and sees a police car behind him with flashing lights. Noticing this, Carlos pulls over. The police officer does too, gets out, and approaches Carlos’s car. Standing on the other side of the window, the officer says to Carlos, “Why did you run that ‘STOP’ sign? Do you have any fucking idea how dangerous that is? Do you? You could have seriously injured someone. Before you give me your excuses, get out your license and car ownership document. I need to see them.” Carlos hands the officer what he had asked for and the officer goes to the

patrol car. After a few minutes, the officer comes back and says, "I'm giving you a ticket. You can pay it online or mail it in. Or if you want to cancel it be sure to check the 'Not Guilty' box and they will mail you your court appearance date."

*Disrespectful treatment and no sanction*

Carlos is driving down an unfamiliar road and sees a police car behind him with flashing lights. Noticing this, Carlos pulls over. The police officer does too, gets out, and approaches Carlos's car. Standing on the other side of the window, the officer says to Carlos, "Why did you run that 'STOP' sign? Do you have any fucking idea how dangerous that is? Do you? You could have seriously injured someone. Before you give me your excuses, get out your license and car ownership document. I need to see them." Carlos hands the officer what he had asked for and the officer goes to the patrol car. After a few minutes, the officer returns and says that he is not going to give Carlos a ticket, but asks Carlos to be careful not to run any "STOP" signs in the future.

Questions After Vignettes

The following are the questions and possible answers offered in the survey, in translation.

*Satisfaction with treatment*

Question to ask	Not at all	A little	Quite a lot	Completely
How satisfied do you think Carlos would be with the treatment by the police officer?	1	2	3	4

*Acceptance of the decision*

Question to ask	Not at all	A little	Quite a lot	Completely
How willing do you think Carlos would be to accept the police officer's decision?	1	2	3	4

*Willingness to cooperate with the authority*

Question to ask	Not at all	A little	Quite a lot	Completely
How likely is it that Carlos will be willing to cooperate with the authorities when he commits another infraction?	1	2	3	4

*Likelihood of repeating the infraction*

Question to ask	Not at all	A little	Quite a lot	Completely
How likely is it that Carlos will repeat a similar action?	1	2	3	4

## Appendix B. Additional Analyses: Balance Check and Descriptive Statistics

Table B.1. Estimation of Models for Sample Balance Checks on Demographic Characteristics

Respondent group	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Age	Men	Work	Experience < 3 years	Primary education	High school education	Higher than high school education
Civilians	Sanction	0.0143 (0.0398)	0.149 (0.710)	-0.0231 (0.0384)	-0.00219 (0.0404)	0.0584 (0.0512)	-0.0280 (0.0510)	-0.0304 (0.0417)
	Disrespectful treatment	0.00161 (0.0399)	-0.118 (0.707)	-0.0138 (0.0385)	0.0280 (0.0403)	-0.0238 (0.0512)	0.0522 (0.0510)	-0.0284 (0.0416)
	Mean (no sanction; with respectful treatment)	26.31	0.798	0.84	0.809	0.394	0.404	0.202
	Fixed effect (Vignette)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	N	370	370	370	370	370	370	370
	R-squared	0.000	0.010	0.006	0.004	0.004	0.005	0.004
	Police	Sanction	0.0207 (0.0425)	0.831 (0.751)	-0.0220 (0.0264)	-0.0748 (0.0573)	0.00780 (0.0261)	-0.0109 (0.0416)
Disrespectful treatment		0.0143 (0.0427)	1.176 (0.749)	0.0203 (0.0263)	-0.00252 (0.0572)	0.0327 (0.0261)	-0.0588 (0.0416)	0.0261 (0.0351)
Mean (no sanction; with respectful treatment)		26.01	0.835	0.937	0.557	0.051	0.861	0.089
Fixed effect (Vignette)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
N		305	305	305	305	305	305	305
R-squared		0.008	0.021	0.006	0.012	0.016	0.031	0.014

...continues



Respondent group	Variables	(8) Single/ divorced/ widowed	(9) Has children	(10) Lives and works in the same location
Civilians	Sanction	-0.0753 (0.0518)	0.0382 (0.0521)	-0.0206 (0.0516)
	Disrespectful treatment	-0.0155 (0.0518)	0.0115 (0.0521)	-0.0249 (0.0516)
	Mean (no sanction; with respectful treatment)	0.574	0.511	0.596
	Fixed effect (Vignette)	Yes	Yes	Yes
	N	370	370	370
	R-squared	0.007	0.002	0.003
	Police officers	Sanction	-0.00621 (0.0572)	0.0888 (0.0574)
Disrespectful treatment		-0.0953* (0.0572)	-0.0248 (0.0574)	-0.00888 (0.0505)
Mean (no sanction; with respectful treatment)		0.608	0.456	0.266
Fixed effect (Vignette)		Yes	Yes	Yes
N		305	305	305
R-squared		0.009	0.009	0.001

*Source:* Data compiled by authors.

*Note:* Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table B.2. Outcomes for the Different Scenarios**

Scenarios	N	Outcomes			
		Satisfaction with treatment	Accepts decision	Future cooperation	Repeat action
<b>Civilians</b>					
Respectful treatment and no sanction	94	2.49 (1.207)	2.51 (1.143)	2.43 (1.062)	2.07 (0.975)
Respectful treatment and sanction	93	1.89 (1.088)	2.01 (1.068)	2.28 (0.964)	1.91 (0.893)
Disrespectful treatment and no sanction	92	2.01 (0.989)	2.09 (0.991)	2.3 (1.030)	2.07 (0.947)
Disrespectful treatment and sanction	91	1.36 (0.723)	1.55 (0.778)	1.96 (0.988)	1.77 (0.857)
<b>Police officers</b>					
Respectful treatment and no sanction	79	3.25 (0.940)	3.09 (1.028)	2.75 (0.926)	2.27 (0.902)
Respectful treatment and sanction	73	2.19 (1.076)	1.96 (0.934)	2.53 (0.929)	2.1 (0.819)
Disrespectful treatment and no sanction	76	2.01 (0.986)	2.26 (0.998)	2.36 (0.875)	2.37 (0.862)
Disrespectful treatment and sanction	77	1.26 (0.594)	1.39 (0.610)	1.90 (0.867)	1.97 (0.932)

*Source:* Data compiled by authors.

*Note:* Standard errors in parentheses.

## Appendix C. Additional Analyses: Interaction Between Sanction and Respectful Treatment (Long Model)

Table C.1. Impact of Sanction and Procedure on Perception and Attitudes, Civilians and Police: Model With Interaction of Treatment Variables

Repondent groups	Variables	Outcomes			
		Satisfaction with treatment	Accepts decision	Future cooperation	Repeat action
Civilians	Sanction	-0.596*** (0.165)	-0.499*** (0.161)	-0.123 (0.151)	-0.162 (0.136)
	Disrespectful treatment	-0.476*** (0.162)	-0.422*** (0.157)	-0.141 (0.149)	-0.0115 (0.141)
	Sanction x Disrespectful treatment	-0.0513 (0.210)	-0.0376 (0.209)	-0.202 (0.210)	-0.136 (0.190)
	Mean (no sanction; respectful treatment)	2.489	2.511	2.426	2.074
	Fixed effect (Vignette)	Yes	Yes	Yes	Yes
	N	370	370	370	370
	R-squared	0.149	0.107	0.039	0.031
Police	Sanction	-1.055*** (0.154)	-1.121*** (0.146)	-0.208 (0.147)	-0.172 (0.139)
	Disrespectful treatment	-1.237*** (0.150)	-0.821*** (0.151)	-0.390*** (0.143)	0.102 (0.142)
	Sanction x Disrespectful treatment	0.293 (0.205)	0.235 (0.195)	-0.257 (0.203)	-0.220 (0.201)
	Mean (no sanction; respectful treatment)	3.253	3.089	2.747	2.266
	Fixed effect (Vignette)	Yes	Yes	Yes	Yes
	N	305	305	305	305
	R-squared	0.425	0.408	0.140	0.036

Source: Data compiled by authors.

Note: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## Appendix D. Additional Analyses: Dummy Dependent Variables

Table D.1. Impact of Sanction and Procedure on Civilian and Police Perception and Attitudes: Models With Dummy Dependent Variable

Respondent groups	Variables	Outcomes			
		Satisfaction with treatment	Accepts decision	Future cooperatiion	Repeat action
Civilians	Sanction	-0.245*** (0.0444)	-0.240*** (0.0455)	-0.0977* (0.0506)	-0.106** (0.0442)
	Disrespectful treatment	-0.187*** (0.0443)	-0.150*** (0.0455)	-0.114** (0.0506)	-0.0502 (0.0442)
	Mean (no sanction; with respectful treatment)	0.637	0.574	0.611	0.321
	Fixed effect (Vignette)	Yes	Yes	Yes	Yes
	N	370	370	370	370
	R-squared	0.126	0.095	0.042	0.035
	Police officers	Sanction	-0.300*** (0.0451)	-0.404*** (0.0456)	-0.150*** (0.0543)
Disrespectful treatment	-0.436*** (0.0453)	-0.231*** (0.0459)	-0.250*** (0.0544)	0.0149 (0.0534)	
Mean (no sanction; with respectful treatment)	0.810	0.730	0.730	0.402	
Fixed effect (Vignette)	Yes	Yes	Yes	Yes	
N	305	305	305	305	
R-squared	0.339	0.308	0.029	0.106	

Source: Data compiled by authors.

Note: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table D.2. Heterogeneous Impacts of Sanction and Procedure on Civilian and Police Perception and Attitudes: Models With Dummy Dependent Variable

Variables	Outcomes			
	Satisfaction with treatment	Accepts decision	Future cooperation	Repeat action
Sanction	-0.245*** (0.0444)	-0.239*** (0.0459)	-0.0976* (0.0506)	-0.106** (0.0442)
Disrespectful treatment	-0.187*** (0.0444)	-0.149*** (0.0458)	-0.114** (0.0506)	-0.0498 (0.0442)
Police	0.216*** (0.0586)	0.167*** (0.0611)	0.132** (0.0652)	0.0676 (0.0622)
Sanction x Police	-0.0552 (0.0633)	-0.164** (0.0651)	-0.0528 (0.0742)	-0.0407 (0.0692)
Disrespectful treatment x Police	-0.249*** (0.0634)	-0.0811 (0.0653)	-0.136* (0.0742)	0.0651 (0.0693)
Mean (unsanctioned; respectful treatment; civilian)	0.511	0.500	0.500	0.319
Fixed effect (Vignette)	Yes	Yes	Yes	Yes
N	675	675	675	675
R-squared	0.230	0.181	0.068	0.041

Source: Data compiled by authors.

Note: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.