# The role of anger in mediating the effects of procedural justice and injustice

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## Abstract

Research has found that people's perceptions of the extent to which authority figures behave in a procedurally just (or unjust) manner have powerful effects on a variety of outcomes. Procedural justice has been shown to influence people's sense of obligation to obey and willingness to cooperate with the law and its agents, as well as people's willingness to comply with the law and legal authorities. Yet very little research has examined the causal mechanisms through which the perceived fairness of procedures influences these outcomes. One possibility is that procedural injustice may trigger affective responses such as anger, frustration, or fear. In this study, we test the effects of three procedural justice conditions on a variety of outcomes using a laboratory-style experiment that simulates a police traffic stop. At the same time, we test the extent to which the relationships between procedural justice and these outcomes are mediated by people's self-reported levels of anger. Our findings reveal that the treatment conditions had strong effects on self-reported anger, with the procedural justice condition decreasing anger, and the procedural injustice condition increasing anger. Moreover, the findings reveal that the treatment conditions also exerted indirect effects on all outcomes through anger. Taken together, these findings reinforce the importance of emotion in mediating the effects of procedural justice on a variety of outcomes during intergroup encounters.

A long tradition of research in multiple disciplines has examined the effects of procedural justice (and injustice) on a wide variety of outcomes. The findings from this research demonstrate that when people view authority figures as behaving in a procedurally just manner—that is, when these authority figures are perceived as being fair,

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neutral, trustworthy, and allowing others to voice their perspectives—people are more satisfied and more willing to cooperate or comply with requests from authority figures during intergroup encounters (Sunshine & Tyler, 2003; Tyler, 2006; Tyler & Huo, 2002). Similarly, when people view authority figures as behaving in a procedurally unjust manner during such encounters, they are less satisfied and less willing to cooperate or comply with requests made by authority figures. These findings suggest that exercising authority fairly in intergroup settings can generate a variety of prosocial outcomes, whereas wielding authority unfairly can backfire and generate defiance and rebellion (Sherman, 1993, 2010).

Research on procedural justice and its effects is an important avenue in the study of legal institutions, where intergroup relationships between authority figures and those who are subordinate or subject to their authority are of central importance. For instance, ensuring that police exercise their authority in a fair manner has been a longstanding public policy issue (e.g., Skogan & Frydl, 2004; Sunshine & Tyler, 2003). In prisons, the fair exercise of authority by correctional officers over inmates is both vital and consequential (Sparks et al., 1996). More generally, the application of procedural justice theory to the exercise of law and legal authority helps to illuminate a variety of fundamentally important questions. Most central among these questions is how the behavior of legal authorities (such as police officers, judges, or correctional officers) influences three general outcomes: (a) people's willingness to cooperate with these authorities, (b) people's internalized sense of obligation to obey the law and its agents, and (c) people's actual compliance with the law and its agents. As we will discuss next, research has confirmed that procedural justice has strong effects on all three outcomes.

Unfortunately, less is known about the causal mechanisms through which procedural justice generates these effects. That is why justice-related effects are sometimes described as occurring within a black box (Hagedoorn et al., 1998). To shed light on these mechanisms, scholars have begun to examine factors that may mediate the effects of procedural justice on outcomes such as social identity (e.g., Blount-Hill, 2021; Bradford, 2014; Bradford et al., 2014; Stott et al., 2012; Tyler & Blader, 2003). In addition, there is a growing recognition that affective or emotional responses may be important mediators in this process (Barkworth & Murphy, 2015; Beijersbergen et al., 2015; Murphy & Tyler, 2008). The present study explores these relationships using a laboratory-style experiment that simulates a police traffic stop. Specifically, we examine the extent to which anger mediates the influence of procedural justice on three outcomes: obligation to obey police and the law, willingness to cooperate with police, and trust and confidence in police.

## Procedural Justice in Policing

Procedural justice theory is premised on the idea that people rely heavily on the treatment they experience or observe during interactions with authority figures to form their perceptions and judgments of these authorities and the institutions they represent. As applied to police–citizen encounters, procedural justice theory predicts that when officers employ fair decision-making procedures and treat people in a respectful and dignified manner, police gain legitimacy in the eyes of those who experience or observe these interactions (Tyler & Fagan, 2008). Increased legitimacy translates into greater support for police, cooperation with police, and compliance with police directives (Sunshine & Tyler, 2003; Tyler, 2005; Tyler & Fagan, 2008). Procedural justice has been found to be a stronger predictor of legitimacy—and its accompanying behavioral outcomes—than alternative explanations such as police effectiveness or the favorability of the outcome that citizens receive from police (Sunshine & Tyler, 2003). These results have held true across a range of contexts and study designs, including cross-sectional surveys (e.g., Sunshine & Tyler, 2003; Tyler & Huo, 2002), observational studies (e.g., Dai et al., 2011; Jonathan-Zamir et al., 2013; Mastrofski et al., 1996), and experimental designs (e.g., Johnson et al., 2017; Lowrey et al., 2016; MacQueen & Bradford, 2015; Maguire et al., 2017; Mazerolle et al., 2012).

According to the group engagement model, fairness in decision-making plays a pivotal role in shaping perceptions of the police because procedures shape people's social identities (Bradford, 2014; Bradford et al., 2014; Stott et al., 2012; Tyler & Blader, 2003).[1] When authority figures such as police officers use fair procedures, they communicate positive regard toward the individual on behalf of the group. As a result, individuals incorporate the superordinate group identity into their own sense of self, defining themselves as group members. Greater identification with the group, in turn, promotes voluntary compliance and cooperation (Bradford, 2014; Bradford et al., 2014; Stott et al., 2012). Conversely, individuals "can also have their identities damaged when they receive negative feedback from the group" (Tyler & Blader, 2003, p. 358). Thus, unfair procedures or negative interpersonal treatment may negatively impact a person's social identity and thus, the prosocial and/or antisocial behaviors he or she chooses to engage in. The concept of social identity plays a central role in the group engagement model underlying procedural justice theory (Blader & Tyler, 2009; Tyler & Blader, 2003), and helps explain racial and ethnic differences in evaluations of police (Oliveira & Murphy, 2015).

However, questions remain about other mechanisms that may help explain the connection between the treatment people receive from the police and their subsequent perceptions of and behavior toward law enforcement. Theory and research suggest that emotions may be an important mediating factor.

## Procedural Justice and Emotion

Across disciplines, researchers have long studied the influence of emotions on people's attitudes and behaviors. For instance, appraisal theories are commonly invoked to explain the role of emotions in linking unjust treatment to negative behavioral responses (see e.g., Barclay & Kiefer, 2014; Murphy & Tyler, 2008; Weiss et al., 1999). Appraisal theories constitute a group of theories that differ on their individual propositions but share a framework for explaining how events generate specific emotions (Weiss et al., 1999). First, when faced with a fair or unfair event, people assess "the importance of the event for furthering or thwarting personal goals and values" (Weiss et al., 1999, p. 787). In this first step, an event elicits either a broadly positive or negative emotional response. People then feel individual emotions (e.g., fear, guilt, shame, anger, etc.) based on how they evaluate the context of the event. This framework, therefore, explains how events are responsible for generating specific emotions (Weiss et al., 1999).

Many studies in psychology and organizational behavior have examined the connection between fair or unfair events and the resulting emotional reactions. A common thread running throughout these studies is that "feelings of anger constituted the dominant emotional response" to injustice (Mikula et al., 1998, p. 781). Early studies merely asked participants to describe the emotions they felt when presented with an unfair event (Clayton, 1992; Mikula et al., 1998; Mikula & Schlamberger, 1985). Later research explored emotional responses to (un)fair outcomes and (un)fair procedures (de Cremer et al., 2008; Gordijn et al., 2006; Krehbiel & Cropanzano, 2000; Weiss et al., 1999; Williams, 1999). Respondents reported feeling a range of negative emotions in response to injustice, including shame, fear, sadness, and frustration (Krehbiel & Cropanzano, 2000). Among these negative emotions, anger features prominently (de Cremer et al., 2008; Gordijn et al., 2006; Krehbiel & Cropanzano, 2000; Weiss et al., 1999; Williams, 1999).

Indeed, some studies have found that "emotion is one of the central mediators of reactions to perceived injustice" (Mikula et al., 1998, p. 781). For example, Barclay and Kiefer (2014) found that injustice in the workplace led to negative emotional reactions that, in turn, led employees to withdraw from their work environment. Research has also found that procedural injustice generates negative emotional responses that result in negative behaviors. For example, Murphy and Tyler (2008) used longitudinal data associated with two settings—tax disputes and a workplace environment—to test whether emotions mediate the relationship between procedural justice and compliance. They found that procedurally unjust treatment in the

context of tax disputes (between taxpayers and tax authorities) led to increased anger, which in turn reduced compliance with taxation regulations. With regard to the workplace, the authors found that fair treatment by supervisors resulted in increased happiness among workers. This positive emotion was then found to increase cooperative behavior at work. Murphy and Tyler (2008) conclude that "policies or decisions that elicit negative emotions appear to lead to subsequent non-compliance among those affected . . . In contrast, policies and decisions that elicit positive emotions appear to foster compliance with rules" (p. 665). Other studies have come to similar conclusions regarding the mediating role of emotions (Chebat & Slusarczyk, 2005; Schoefer & Diamantopoulos, 2008; van Yperen et al., 2000). In sum, these findings suggest that emotions "help explain how and why individuals react to justice issues" (Barclay & Kiefer, 2014, p. 1864).

The role of emotions in shaping people's law-related attitudes and behaviors has also been considered in the field of criminology and criminal justice. As Barkworth and Murphy (2015) explain, emotions are integral to strain theory (Agnew, 2001), in which emotions are theorized to mediate the relationship between unfair treatment (strain) and subsequent criminal behaviors. Agnew (2001) named anger, in particular, as central to understanding the connection between injustice and criminal behavior. Rebellon et al. (2012) found that perceived injustice is associated with situational anger, which, in turn, is associated with delinquency. Strain theory provides a potent theoretical explanation for "how and why procedural justice might be linked to compliance through emotion" (Barkworth & Murphy, 2015, p. 257).

Recently, scholars have begun to carry out empirical research to examine whether emotions constitute a link between procedurally fair or unfair treatment and outcomes in law enforcement settings. Murphy and Tyler (2008) found that anger mediated the relationship between perceptions of procedural injustice and subsequent compliance behavior. Barkworth and Murphy (2015) presented participants with a traffic stop vignette that varied the officers' level of trustworthiness, respect, and

citizen voice—the degree to which the officer attended to the citizen's questions and concerns. The authors then measured participants' negative affect (the degree to which they were frustrated, tense, angry, resentful, and anxious) as well as participants' attitudes toward future compliance with the law based on the encounter they read about. The authors found that negative emotions mediated the relationship between officer procedural justice and compliance. However, the authors were unable to isolate the effects of anger specifically because it was just one indicator in a composite measure of negative emotions.

Similarly, emotions have also been found to play a mediating role between justice assessments and outcomes in the correctional context (Beijersbergen et al., 2015). In a longitudinal study carried out in a Dutch prison, Beijersbergen et al. (2015) measured the extent to which prisoners perceived the prison staff as procedurally just, as well as their feelings of anger toward prison staff. Prisoner misconduct was measured by the prisoners' level of aggression and whether they had received disciplinary reports. Not only did procedural justice predict prisoner misconduct, but anger was found to mediate this relationship. On the other hand, a recent study of inmates in a Chicago work release facility found that procedural justice did not have a direct effect on anger and that anger did not mediate the effects of procedural justice on cooperation and compliance (Maguire et al., 2021). However, anger was found to have a significant (negative) direct effect on compliance with prison staff.

Taken together, this multidisciplinary body of research indicates that emotions may mediate the relationship between perceived treatment by authority figures and subsequent attitudes, intentions, and behaviors (Barkworth & Murphy, 2015; Fox et al., 2001). In contrast to positive emotions, negative emotions such as anger and frustration may have a particularly strong effect on a variety of outcomes (Maguire et al., 2017; Skogan, 2006). As emphasized by Barclay and Kiefer (2014, p. 1865), "negative emotions produce stronger and more pervasive reactions than positive emotions because negative emotions can be disruptive and require cognitive as well as emotional resources to

manage." While much of the research on these issues relies on composite measures of negative emotions, there are good reasons to investigate the role of anger specifically. As noted by Lambert et al. (2019, p. 114), "different types of affective experiences can have markedly different consequences for action and thought, even if they share the same valence and are significantly correlated." Anger plays a particularly unique role in responding to perceived injustice (de Cremer et al., 2008; Gordijn et al., 2006; Krehbiel & Cropanzano, 2000; Mikula et al., 1998; Weiss et al., 1999; Williams, 1999). While injustice can trigger a variety of negative emotional responses, "anger often dominates one's emotional response to justice violations" (Lambert et al., 2019, p. 123).

## The Present Study

Given the prominent role of anger in previous research on people's reactions to injustice, the present study examines its role in mediating the relationships between perceptions of procedural justice and (a) trust and confidence in the police, (b) cooperation with the police, and (c) obligation to obey the police. Although not the main focus of this study, we also consider how race may shape these relationships. We draw on data from a laboratory-style experiment in which participants were randomly assigned to view a video of a mock traffic stop featuring three procedural justice conditions (procedurally just, unjust, and neutral) and two driver race conditions (White and Black). The results illuminate the intersection of police behavior and emotion in shaping people's reactions to police–citizen encounters.

## Method

### Design

This study is based on a 3 x 2 randomized factorial design in which 651 participants watched a short video of a simulated traffic stop with three procedural justice conditions: positive (procedurally just), negative (procedurally unjust), and neutral (control), and two driver race conditions

**Table 1.** Demographic characteristics.

| Characteristic | % |
|---|---|
| Age | |
|   18–25 | 10.8% |
|   26–40 | 24.4% |
|   41–55 | 30.9% |
|   56–70 | 33.9% |
| Sex | |
|   Male | 45.5% |
|   Female | 54.2% |
|   Intersex | 0.3% |
| Race | |
|   White only | 77.7% |
|   Black only | 13.7% |
|   Asian or Pacific Islander only | 3.4% |
|   Other only | 3.2% |
|   Mixed race | 2.0% |
| Hispanic ethnicity | |
|   Hispanic | 14.9% |
|   Non-Hispanic | 85.1% |
| Middle Eastern ethnicity | |
|   Middle Eastern | 3.5% |
|   Non-Middle Eastern | 96.5% |
| Birthplace | |
|   Born in the United States | 93.4% |
|   Born elsewhere | 6.6% |

(a White and an African American driver). Participants answered questions about their attitudes toward the police and the law following the video simulation.

### Participants

Participants in this study consisted of a sample of U.S. adults, census balanced on age, sex, race, and census region. Participants were recruited throughout February and March 2016 with the help of the survey research firm Survey Sampling International (SSI). A total of 1,538 participants completed the survey; however, a subsample of 651 participants was used in the present study.[2] A priori power analyses revealed that with a sample size of approximately 600 participants, the study would have moderate power to detect treatment effects.[3] Table 1 summarizes the demographic

characteristics of the 651 participants, including age, sex, race, and ethnicity.

## Procedures

Participants accessed an online survey where they were randomly assigned to view one of six videos based on the 3 x 2 factorial design (three procedural justice conditions multiplied by two driver race conditions). The video clips depicted a mock traffic stop wherein a law enforcement officer approached a vehicle, interacted with an 18-year-old male driver, and issued a citation for speeding.[4] The videos were filmed from the perspective of the officer's body-worn camera to make the staged interactions appear realistic. Participants were not informed that the traffic stop was fictional. Directly after watching the video, participants reported their level of anger. Participants then answered a series of questions about their perceptions of the officer shown in the video and their attitudes toward police and the law more generally. After completing demographic questions and two open-ended feedback questions, participants were debriefed. Additional details about the study procedures, production of the video clips, and experimental treatments are reported in earlier studies (see Johnson et al., 2017; Lowrey et al., 2016; Maguire et al., 2017).

## Treatments

*Procedural justice condition.* The three procedural justice conditions in this study consisted of a neutral (control) condition, a procedural justice condition, and a procedural injustice condition. Although each interaction had the same basic structure, each treatment condition varied the language and tone of voice used by the officer when speaking with the citizen.

Consistent with a neutral communication style (neither overtly respectful nor disrespectful), in the control condition, the officer merely told the driver he was being stopped for speeding ("You were going 48 in a 30"), asked the driver for documentation ("License and registration"), and issued him a ticket ("I'm issuing you a ticket for speeding"). The officer did not introduce himself, explain the reason for the stop, or give justification for the ticket. This treatment condition was therefore aligned with a neutral communication style.

The positive condition incorporated the four main tenets of procedural justice, namely respectful treatment, neutrality in decision-making, trustworthy motives, and citizen voice. For example, the officer opened the interaction by introducing himself to the driver, politely requesting documentation, and thanking the driver. These features of the dialogue reflect the recommendation from procedural justice theory that officers treat citizens with dignity and respect. Additionally, the officer provided a reason for the stop ("I've stopped you this evening because the posted speed limit is 30 miles per hour, and you were going 48 miles per hour"), reflecting lack of bias in decision-making. When he delivered his decision to issue a ticket, the officer framed the decision in the context of community safety ("Listen, every year, people die on these roads from speeding and we're just trying to keep that from happening"), thereby conveying his trustworthy motives. Finally, the officer asked the driver whether he had any questions, invoking citizen voice. This interaction, therefore, incorporated the essential elements of a procedurally just traffic stop.

The third condition consisted of a negative or procedurally unjust interaction in which the officer treated the driver disrespectfully. In contrast to the procedurally just condition that remained polite throughout, in the negative condition, the officer opened by berating the driver ("Are you out of your damned mind driving like that? You were going 48 in a 30. What are you trying to kill somebody?") and angrily demanding documentation ("Give me your license and registration"). In framing his decision to issue a ticket, the officer told the driver "You're lucky I don't arrest you for reckless driving." After ordering the driver to sign the ticket ("Sign on the bottom line"), he told the driver "Now, get out of here. I better never see you driving around here like that again." This interaction was therefore marked by inconsiderate and disrespectful treatment by the officer.[5]

*Driver race condition.* Two 18-year-old men with similar physical builds, one White and one African American, were featured as drivers in the videos. Both men wore casual clothes and were filmed sitting in the driver's seat of the same vehicle in the same lighting conditions. The actors were instructed to limit their speaking during the interaction, avoid visible reactions to the officer's behavior, and use similar movements to ensure consistency in their demeanor and behavior across the three procedural justice conditions.

## Measures

*Outcomes.* The dependent variables were measures of the participants' trust and confidence in the police, obligation to obey the police, and willingness to cooperate with the police. These three concepts were measured at both the encounter-specific level (in reference to the officer in the video) and the global level (in reference to the police more generally). All items were measured using a Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*). Each outcome was treated as a latent variable and measured with multiple indicators. The items comprising all latent variables are listed in Appendix A, together with descriptive statistics for the full sample. The item means for each treatment condition are shown in Appendix B.

*Mediator.* This study tested whether participants' anger mediated the relationship between the experimental treatments and participants' trust and confidence in the police, obligation to obey the police, and willingness to cooperate with the police at the encounter-specific and global levels. In order to measure respondents' anger, participants were asked (immediately after watching the video) to indicate the degree to which they agreed or disagreed with four statements: "I feel angry," "I am furious," "I feel irritated," and "I am mad." As with the outcome variables, these responses were measured using a Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*). Anger was treated as a latent variable and measured using these four indicators. Figures 1a and 1b illustrate

the structural equation models we tested for the encounter-specific outcomes and the global outcomes, respectively. Confirmatory factor analyses revealed that measurement models containing the latent outcomes and the latent mediator all fit the data well, and that the indicators had high loadings.[6]

## Results

We relied on structural equation modeling methods to estimate the effects of the procedural justice treatment on the six outcomes (three encounter-specific outcomes and three more global outcomes). We estimated the direct effect of the positive (procedural justice) treatment on all six outcomes, and the indirect effect of the treatment on these six outcomes through a measure of anger. The standard errors of the indirect effects were computed using the delta method (MacKinnon, 2008; Muthén et al., 2016). Due to the study design and the complexity of the model relative to our sample size, we present the results from six separate structural equation models. These six models result from cross-classifying three contrasts between treatment conditions (positive vs. negative, positive vs. neutral, and neutral vs. negative) and two sets of outcome measures (encounter-specific and global outcomes).

Table 2a presents direct and indirect effect estimates for the encounter-specific outcomes based on a comparison of the positive (procedural justice) and negative (procedural injustice) treatment conditions (positive = 1, negative = 0). The findings reveal that the procedural justice treatment had a negative and statistically significant direct effect on anger. Put differently, respondents who observed a video depicting a procedurally just interaction were less angry than those who observed a video featuring a procedurally unjust interaction. The procedural justice condition also had a significant positive effect on all three of the encounter-specific outcomes, including trust and confidence, obligation to obey, and willingness to cooperate (for the sake of brevity, we abbreviate the names of the outcomes as trust, obligation, and cooperation in all tables). The magnitude of
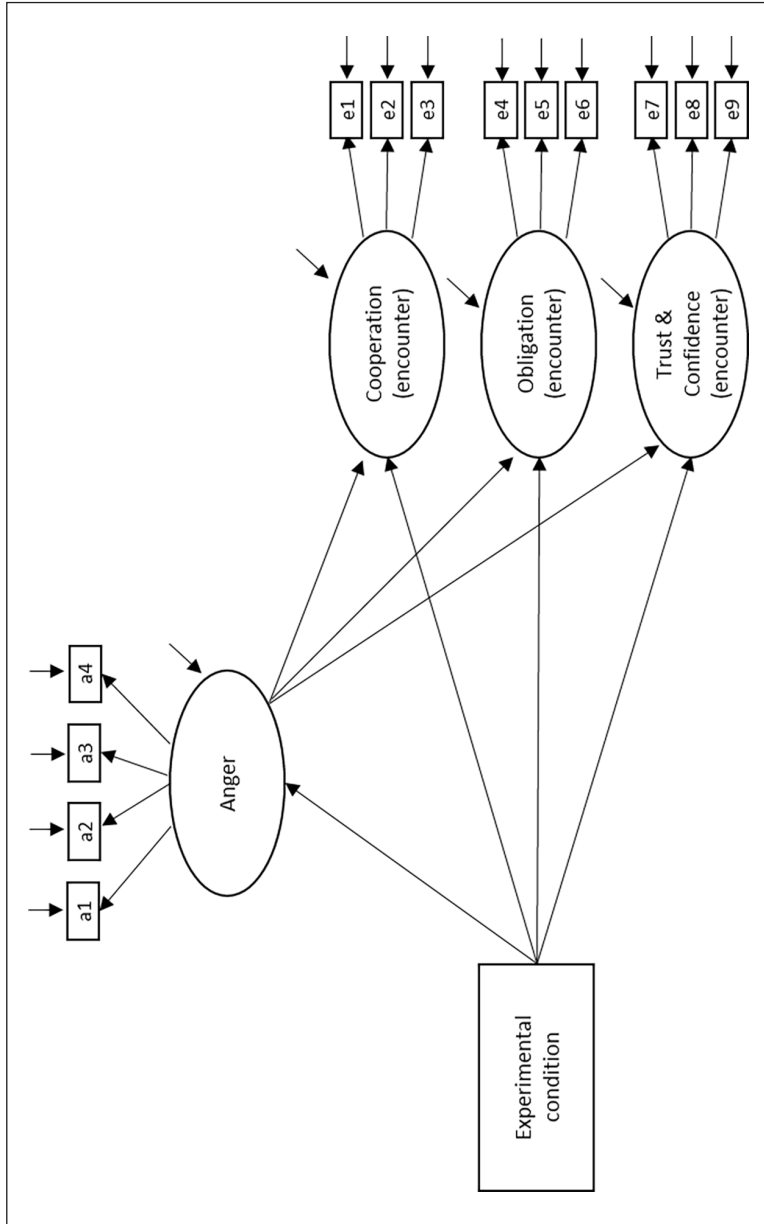
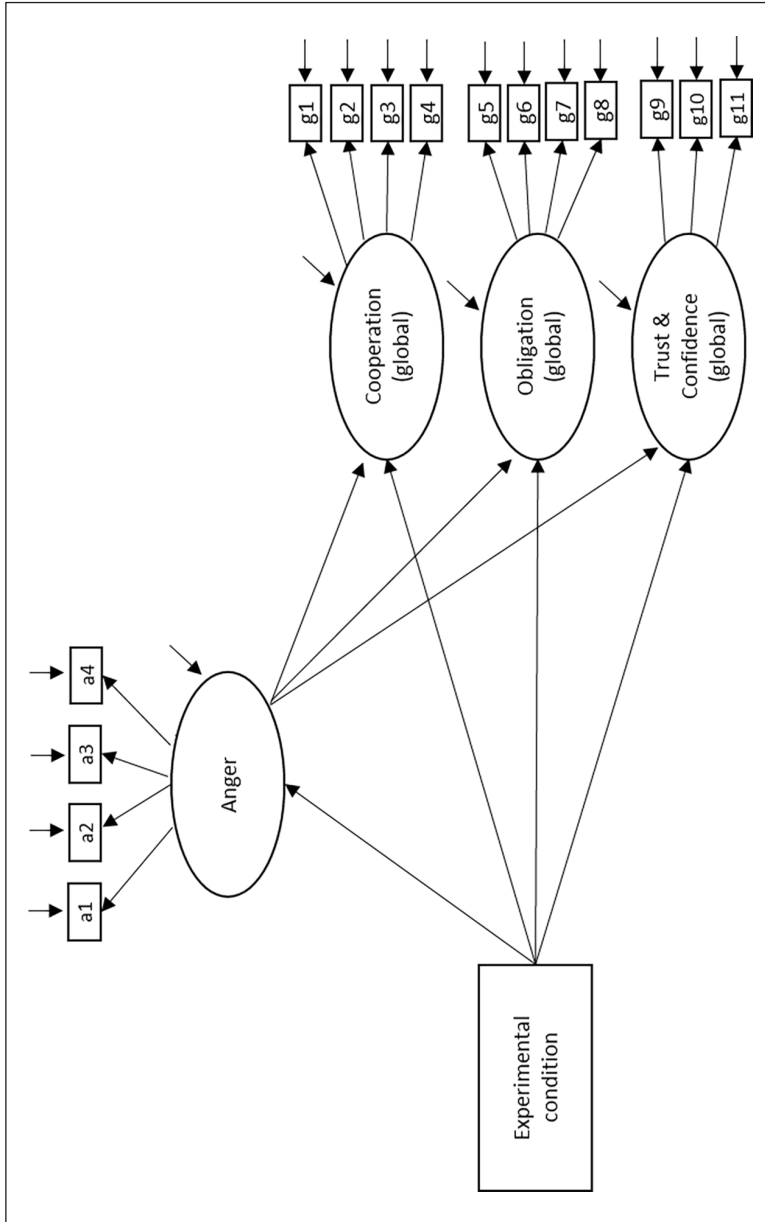**Figure 1a.** Structural equation model, encounter-specific outcomes.

**Figure 1b.** Structural equation model, global outcomes.

**Table 2a.** Direct and indirect effects, encounter-specific outcomes (positive vs. negative).

| | Anger | Encounter-specific outcome: Trust | Encounter-specific outcome: Obligation | Encounter-specific outcome: Cooperation |
|---|---|---|---|---|
| **Direct effects** | | | | |
| Treatment (positive = 1, negative = 0) | −.47 ($p <$ .001) | .25 ($p <$ .001) | .15 ($p =$ .003) | .16 ($p =$ .001) |
| Anger | - | −.57 ($p <$ .001) | −.44 ($p <$ .001) | −.50 ($p <$ .001) |
| **Indirect effects** | | | | |
| Treatment → Anger → Outcome | - | .27 ($p <$ .001) | .20 ($p <$ .001) | .23 ($p <$ .001) |
| Explained variance ($R^2$) | .217 | .518 | .271 | .344 |

*Note.* Cells contain fully standardized regression coefficients.

**Table 2b.** Direct and indirect effects, encounter-specific outcomes (positive vs. neutral).

| | Anger | Encounter-specific outcome: Trust | Encounter-specific outcome: Obligation | Encounter-specific outcome: Cooperation |
|---|---|---|---|---|
| **Direct effects** | | | | |
| Treatment (positive = 1, neutral = 0) | −.16 ($p =$ .002) | .16 ($p <$ .001) | .15 ($p =$ .002) | .11 ($p =$ .032) |
| Anger | - | −.58 ($p <$ .001) | −.42 ($p <$ .001) | −.46 ($p <$ .001) |
| **Indirect effects** | | | | |
| Treatment → Anger → Outcome | - | .09 ($p =$ .003) | .07 ($p =$ .003) | .07 ($p =$ .003) |
| Explained variance ($R^2$) | .026 | .391 | .222 | .234 |

*Note.* Cells contain fully standardized regression coefficients.

the effect of the treatment on anger was larger than the effect of the treatment on the three encounter-specific outcomes. This finding reinforces the idea that there is a strong linkage between the level of procedural justice used by police in encounters with citizens and the emotional responses of vicarious observers of these encounters. Furthermore, the findings also reveal that anger had a strong, negative and statistically significant direct effect on all three of the encounter-specific outcomes. In all cases, the effects of anger were stronger in magnitude than the effects of the treatment. For instance, the standardized coefficient for the effect of anger on trust was $\beta = -.57$, whereas the coefficient for the effect of the treatment on trust was $\beta = .25$. Similar patterns emerged for obligation and cooperation,

with anger having stronger direct effects than the treatment. Our analysis also reveals that the treatment had positive and statistically significant indirect effects on all three of the encounter-specific outcomes through anger. Thus, the procedural justice treatment exerted both direct effects on encounter-specific trust, obligation, and cooperation, as well as indirect effects on these outcomes via anger.

Table 2b presents direct and indirect effect estimates for the encounter-specific outcomes based on comparing the positive and neutral treatment conditions (positive = 1, neutral = 0). The findings reveal that the procedural justice treatment had a negative and statistically significant direct effect on anger. Respondents who viewed a video featuring an officer behaving in a

**Table 2c.** Direct and indirect effects, encounter-specific outcomes (negative vs. neutral).

| | Anger | Encounter-specific outcome: Trust | Encounter-specific outcome: Obligation | Encounter-specific outcome: Cooperation |
|---|---|---|---|---|
| **Direct effects** | | | | |
| Treatment (negative = 1, neutral = 0) | .34 ($p < .001$) | −.17 ($p < .001$) | −.02 ($p = .747$) | −.09 ($p = .059$) |
| Anger | - | −.53 ($p < .001$) | −.44 ($p < .001$) | −.52 ($p < .001$) |
| Indirect effects | | | | |
| Treatment → Anger → Outcome | - | −.18 ($p < .001$) | −.15 ($p < .001$) | −.18 ($p < .001$) |
| Explained variance ($R^2$) | .115 | .375 | .195 | .312 |

*Note.* Cells contain fully standardized regression coefficients.

procedurally just manner reported feeling less angry than those who observed the control video in which an officer behaved in a neutral manner. The procedural justice treatment also exerted a significant positive direct effect on all three encounter-specific outcomes (trust, obligation, and cooperation). The findings also reveal that anger had a strong and significant negative direct effect on all three of the encounter-specific outcomes. In all cases, the magnitudes of the direct effects of anger were much stronger than those of the treatment. For instance, the standardized coefficient for the effect of anger on trust was $\beta = -.58$, whereas the coefficient for the effect of the treatment on trust was $\beta = .16$. Put differently, the direct effect of anger on trust was about 3.6 times larger than the effect of the treatment on trust. The direct effect of anger on obligation was about 2.9 times larger than the effect of the treatment. For cooperation, the direct effect of anger was about 4.2 times larger than the effect of the treatment. Our findings also show that the treatment had positive and statistically significant indirect effects on all three of the encounter-specific outcomes. Relative to participants exposed to the neutral condition, those who were exposed to the procedural justice condition reported greater feelings of trust, obligation, and cooperation toward the officer involved in the encounter. Our findings reveal that the treatment exerted direct effects on these outcomes as well as indirect effects that operated through anger.

Table 2c presents direct and indirect effect estimates for the encounter-specific outcomes based on comparing the negative and neutral treatment conditions (negative = 1, neutral = 0). The findings reveal that the negative (procedural injustice) treatment had a positive and statistically significant direct effect on anger. Respondents who viewed a video featuring an officer behaving in a procedurally unjust manner reported feeling significantly more anger than those who observed the control video in which an officer behaved in a neutral manner. The procedural injustice treatment condition had a significant direct effect on only one of the three encounter-specific outcomes. Observing a procedurally unjust encounter was associated with significantly lower levels of trust and confidence. Exposure to the procedural injustice condition (relative to the neutral control condition) did not have a significant effect on obligation to obey or willingness to cooperate. The findings also reveal that anger had a strong, negative, and statistically significant direct effect on all three of the encounter-specific outcomes. Our findings also show that the procedural injustice treatment had negative and statistically significant indirect effects on all three of the encounter-specific outcomes. Relative to participants exposed to the neutral condition, those who were exposed to the procedural injustice condition reported lower feelings of trust, obligation, and cooperation toward the officer involved in the encounter. Our findings emphasize the importance of anger in mediating these effects.

**Table 3a.** Direct and indirect effects, global outcomes (positive vs. negative).

|  | Anger | Global outcome: Trust | Global outcome: Obligation | Global outcome: Cooperation |
|---|---|---|---|---|
| **Direct effects** |  |  |  |  |
| Treatment (positive = 1, negative = 0) | −.47 (*p* < .001) | .04 (*p* = .508) | .04 (*p* = .496) | .03 (*p* = .538) |
| Anger | - | −.38 (*p* < .001) | −.25 (*p* < .001) | −.31 (*p* < .001) |
| **Indirect effects** |  |  |  |  |
| Treatment → Anger → Outcome | - | .18 (*p* < .001) | .12 (*p* < .001) | .14 (*p* < .001) |
| Explained variance (*R²*) | .217 | .130 | .071 | .106 |

*Note.* Cells contain fully standardized regression coefficients.

**Table 3b.** Direct and indirect effects, global outcomes (positive vs. neutral).

|  | Anger | Global outcome: Trust | Global outcome: Obligation | Global outcome: Cooperation |
|---|---|---|---|---|
| **Direct effects** |  |  |  |  |
| Treatment (positive = 1, neutral = 0) | −.16 (*p* = .002) | .04 (*p* = .506) | .05 (*p* = .328) | .07 (*p* = .193) |
| Anger | - | −.30 (*p* < .001) | −.27 (*p* < .001) | −.28 (*p* < .001) |
| **Indirect effects** |  |  |  |  |
| Treatment → Anger → Outcome | - | .05 (*p* = .006) | .04 (*p* = .008) | .04 (*p* = .007) |
| Explained variance (*R²*) | .026 | .093 | .080 | .088 |

*Note.* Cells contain fully standardized regression coefficients.

While the indirect effects of the procedural injustice treatment (via anger) were statistically significant for all three encounter-specific outcomes, the direct effects of the treatment were statistically significant only for trust.

Table 3a presents direct and indirect effect estimates for the global outcomes based on comparing the positive (procedural justice) and negative (procedural injustice) conditions (positive = 1, negative = 0). We will not reiterate the findings with regard to the direct effect of procedural justice on anger since we reported these effects earlier. The findings reveal that the procedural justice treatment condition did not have a statistically significant direct effect on any of the three global outcomes. Observing a procedurally just encounter did not have a direct influence on people's levels of trust and confidence in, obligation to obey, or willingness to cooperate with police in general. However, the findings reveal that anger had a significant negative direct effect on all three of these global outcomes. Our findings also show that the procedural justice treatment had significant positive indirect effects on all three of the global outcomes. Relative to participants exposed to the procedural injustice condition, those who were exposed to the procedural justice condition reported stronger feelings of trust, obligation, and cooperation toward police in general. However, these patterns did not result from the direct effects of the treatment, but rather from the indirect effects of the treatment via anger. Our findings therefore emphasize the importance of anger in mediating the effects of exposure to police–citizen encounters on people's global views of the police.

Table 3b presents direct and indirect effect estimates for the global outcomes based on comparing the positive (procedural justice) and neutral conditions (positive = 1, neutral = 0). The

**Table 3c.** Direct and indirect effects, global outcomes (negative vs. neutral).

|  | Anger | Global outcome: Trust | Global outcome: Obligation | Global outcome: Cooperation |
|---|---|---|---|---|
| **Direct effects** |  |  |  |  |
| Treatment (negative = 1, neutral = 0) | .34 ($p < .001$) | −.06 ($p = .264$) | −.03 ($p = .520$) | −.07 ($p = .160$) |
| Anger | - | −.36 ($p < .001$) | −.29 ($p < .001$) | −.41 ($p < .001$) |
| **Indirect effects** |  |  |  |  |
| Treatment → Anger → Outcome | - | −.22 ($p < .001$) | −.15 ($p < .001$) | −.26 ($p < .001$) |
| Explained variance ($R^2$) | .115 | .117 | .078 | .149 |

*Note.* Cells contain fully standardized regression coefficients.

findings reveal that the procedural justice treatment condition did not have a statistically significant direct effect on any of the three global outcomes. Observing a procedurally just encounter (relative to a neutral encounter) did not have a direct influence on people's global levels of trust and confidence in, obligation to obey, or willingness to cooperate with the police. However, the findings reveal that anger had a significant negative direct effect on all three of these global outcomes. Our findings also show that the procedural justice treatment condition had significant positive indirect effects through anger on all three of the global outcomes. Relative to participants exposed to the neutral control condition, those who were exposed to the procedural justice condition reported stronger feelings of trust, obligation, and cooperation toward police in general. Once again, these patterns did not result from the direct effects of the treatment but from the indirect effects of the treatment via anger.

Table 3c presents direct and indirect effect estimates for the global outcomes based on comparing the negative (procedural injustice) and neutral conditions (negative = 1, neutral = 0). The findings reveal that the procedural injustice treatment condition did not have a statistically significant direct effect on any of the three global outcomes. Observing a procedurally unjust encounter (relative to a neutral encounter) did not appear to have a direct influence on people's global levels of trust and confidence in, obligation to obey, or willingness to cooperate with the

police. However, the findings reveal that anger had a significant negative direct effect on all three of these global outcomes. Our findings also show that the procedural injustice treatment condition had significant negative indirect effects on all three of the global outcomes. Relative to participants exposed to the neutral control condition, those who were exposed to the procedural injustice condition reported weaker feelings of trust, obligation, and cooperation toward police in general. Once again, these patterns did not result from the direct effects of the treatment but instead from the indirect effects of the treatment via anger.

So far, the findings we have presented are based on a pooled analysis of respondents who viewed videos featuring either Black or White drivers. We also carried out a series of supplementary analyses to explore whether the relationships we have reported differ depending on whether the driver in the video was White or Black. Perceptions of and attitudes toward the police vary across racial groups (Hagan et al., 2005; Peck, 2015; Weitzer & Tuch, 1999, 2005; Wortley et al., 1997). These differences are typically attributed to differential direct and vicarious experiences and interactions with law enforcement (Cobbina, 2019; Pryce et al., 2021; Warren, 2011), and have been linked to social group identity (Blount-Hill, 2021; Epp et al., 2014; Oliveira & Murphy, 2015; Rengifo & Slocum, 2020). Given the long-standing concern in African American communities about racial bias in the

enforcement and application of the law, and the significant attention policing practices in communities of color have received nationally in recent years, it is possible that the unfair treatment of an African American driver may be more likely to elicit anger among respondents than the unfair treatment of a White driver.[7] We test this possibility in what follows.

Using a multiple-group structural equation modeling approach, we tested the effect of constraining the regression coefficients in each model to be equal for those who saw a video with a Black driver and those who saw a video with a White driver (Muthén et al., 2016). Altogether, we tested this equality constraint for 42 regression coefficients (6 models x 7 coefficients per model; see Figures 1a and 1b). Only one of the 42 coefficients we examined differed significantly across groups. When the equality constraint for this coefficient was relaxed, it was found to be nonsignificant in both groups, therefore our substantive findings remain unchanged.[8] The evidence suggests that the causal dynamics reported in this study are the same whether the driver in the treatment condition was Black or White.

## Discussion

Encounters between police officers and the public are "among the most visibly salient identity-marking of intergroup settings" (Choi & Giles, 2012, p. 286). Traffic stops are one of the most common types of encounters with police officers for many people (Dixon et al., 2008; Lowrey-Kinberg, 2021). Much remains to be learned about the intergroup dynamics that occur during these types of encounters. This study sought to illuminate the causal mechanisms underlying the effects of procedural justice perceptions during an intergroup encounter between a police officer and a driver. As in previous experimental studies (e.g., Johnson et al., 2017; Mazerolle et al., 2012; Sahin, 2014), we found that respondents' perceptions of an officer improve when the officer behaves in a procedurally just manner. Conversely, we found that respondents' perceptions of the officer's trustworthiness, as well as their

self-reported compliance and obligation to obey, decrease when the officer behaves in a procedurally unjust manner.

Regarding the central question of our study—the role of emotions in mediating the effect of procedural justice—we found that exposure to a procedurally just interaction between an officer and a driver reduces participant anger, while exposure to a procedurally unjust interaction increases participant anger. These findings are consistent with prior research pointing to anger as a prominent affective response to injustice (de Cremer et al., 2008; Gordijn et al., 2006; Krehbiel & Cropanzano, 2000; Mikula et al., 1998; Weiss et al., 1999; Williams, 1999), and demonstrate the salience of emotions in the policing context. Additionally, our results corroborate other studies that have found anger is an important link between procedurally (un)just treatment and behavioral outcomes in criminal justice settings (Barkworth & Murphy, 2015; Murphy & Tyler, 2008). Our results highlight the notion that how people respond to interactions with authority figures is influenced by a combination of the procedural fairness exhibited by an authority figure and people's emotional responses to those interactions.

Consistent with previous research in both laboratory-style experiments and field trials, we found that the experimental treatments did not directly affect general perceptions of the police (Lowrey et al., 2016; Maguire et al., 2017; Mazerolle et al., 2012; Sahin, 2014). However, when we tested the indirect effect of the treatments through anger, we found significant effects on all three general outcomes. In other words, it appears that the way a police officer behaves during an encounter with a driver prompts an affective response from the participant, which in turn influences their general attitudes toward the police. While previous research has suggested that people build their perceptions of police over multiple interactions (Sahin, 2014), the present findings suggest a second possibility: that emotional responses may be at least partly responsible for shaping global attitudes toward police. Thus, people's overall attitudes toward the police may result from not only repeated interactions over

time, but also from the emotions elicited by these interactions.

Our results have theoretical implications for understanding how procedural justice translates into increased trust, cooperation, and obligation to obey the police. The group engagement model proposes that fair procedures communicate that the recipient is a valued group member, which then causes people to identify with the group and voluntarily engage in prosocial behaviors. Our results suggest that the emotions elicited by fair/unfair treatment may constitute an important link between the fairness of procedures and resulting attitudes or behaviors. Clarifying the precise role of emotions in this causal sequence is an important area of focus for future research. Our results add to a growing body of research suggesting that emotions are an important mechanism through which injustice influences attitudes and behaviors. Much remains to be learned about the role of emotions, including anger, in shaping the relationships between police and the public (Maguire & Giles, 2022; Myers et al., 2008), and in intergroup relations more generally (Gordijn et al., 2006; Mackie & Smith, 2017; Maitner et al., 2017). Future research should continue to explore and illuminate the "affective consequences of unfair treatment" (Weiss et al., 1999, p. 791).

Interestingly, our results showed that varying the race of the driver did not alter the relationship we found between procedural justice, anger, and behavioral outcomes. The relationship between procedural (in)justice and anger in response to a police stop is likely influenced by a variety of factors, including the intersectional identities of the driver and the officer involved, the respondent's own intersectional identities, and the nature of their previous direct and vicarious experiences with law enforcement and/or the justice system (Johnson et al., 2017). Our study design did not allow us to delve into these nuances, but future research is warranted. Given the fraught historical and contemporary relationship between police and communities of color, it is possible that the relationship between procedural justice and anger is influenced by both the race of the driver and the race of the respondent

(and even the race of the officer). For example, unfair treatment toward an African American driver may be more likely to elicit anger among Black observers than among White observers, given that African Americans' evaluations of the police are shaped by the shared and cumulative trauma of disproportionate police contact, coercive policing experiences, and police violence; in contrast, large percentages of White people deny the existence of racially discriminatory policing practices and may not have a similar emotional response (Cobbina, 2019; Drakulich et al., 2022; Ekins, 2017; Montanaro, 2021; Pryce et al., 2021; Warren, 2011). Conversely, observing an officer treat a White driver unfairly may produce more angry feelings among White respondents than Black respondents, given that White people are generally less likely to experience police disrespect and misconduct, and may expect more deferential treatment from law enforcement (Epp et al., 2014). We were unable to adequately examine these types of interaction effects due to the small number of people of color in our sample and our research design (the officer was not visible in the video).[9] We encourage scholars to explore these potential interaction effects in future studies.

On an applied level, the direct and indirect effects identified in this study are useful for thinking about how to improve interactions between police and the public. First, our results emphasize the importance of implementing procedurally fair policing practices. Our results, in addition to the findings from previous research on procedural justice, point to the central role that fair procedures play in promoting trust in the police, as well as voluntary cooperation and compliance with the police and the law. Second, our results demonstrate that the negative emotions elicited by unfair procedures appear to play a central role in shaping behavioral outcomes. Incorporating the principles of procedural justice into police training can reduce the negative affective responses often associated with police interactions and promote public safety through increased cooperation and compliance with police. Because police interactions with the public are sometimes

coercive—such as conducting stops and searches, issuing citations, making arrests, and using force—it is unreasonable to expect that everyone who comes into contact will have a positive view of the police. However, our results illustrate the benefits of adopting styles of policing that promote fair treatment and minimize the extent to which the public responds angrily to interactions with the police.

A primary strength of the present study is its experimental design, which allows causal connections to be drawn between procedural (in)justice, anger, and the behavioral outcomes.

Despite this strength, one potential limitation of the present research is the vicarious nature of the interaction. In contrast to field trials in which participants directly interact with an officer, participants in this study watched the interaction and reacted to it. While this vicarious interaction might dilute the effects of the treatment, research has found that indirect interactions (including vicarious exposure through the media) can affect perceptions of police (e.g., Augustyn, 2016; Pryce et al., 2021; Rosenbaum et al., 2005; Warren, 2011; Weitzer & Brunson, 2009). Further, one benefit of using simulated interactions as experimental treatments is that they can be manipulated to fit a variety of contexts. This design is especially useful in testing the effect of treatments that would be difficult or impossible to test in the field, such as the negative interaction used here.[10] Additionally, while this and several other experimental studies are based on real or simulated traffic stops, a similar design could be implemented to test the effects of procedural justice policing in situations with a different interpersonal dynamic, such as an interaction between an officer and the victim of a crime.

## Conclusion

Intergroup encounters between authority figures and people who are subordinate or subject to their authority do not take place in an emotional vacuum. These interactions can trigger intense emotional reactions among those involved and for vicarious observers. To date, little empirical research has sought to elucidate the nature and consequences of these emotional reactions. Understanding the consequences of these interactions at a deeper level will mean continuing to unpack the causal linkages between experiences and perceptions of justice, the resulting emotional reactions, and their associated attitudinal and behavioral outcomes.

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## Supplemental material

Supplemental material for this article is available online.

## Notes

1. Social identity refers to how people "define and evaluate themselves in terms of the groups to which they belong" (Hogg, 2013, p. 532).
2. The overall study featured five driver race and ethnicity conditions. Due to journal space limitations, the present analysis relies on a subset of the data containing only two of the five driver race conditions (White and Black drivers). Future analyses will include the remaining driver race and ethnicity conditions.
3. Based on preliminary power analyses, we estimated that with a power of .80 and an $\alpha$ level of .05, a minimum sample size of 64 would be necessary to detect a large effect ($f = .40$), 158 to detect a medium-sized effect ($f = .25$), and 967 to detect a small effect ($f = .10$; Cohen, 1992). Our a priori power estimates suggested that with a sample size of 600, we would have power of 1.0 to detect large (main) effects, .999 to detect medium effects, and .582 to detect small effects. These estimates suggest that with an achieved sample size of 651, our experiment is sufficiently powered to detect medium and large effects but may be underpowered to detect small effects.

4.  The role of the officer was played by a researcher with previous experience working as a police officer. The role of the driver was played by two teenage male actors, one White and one Black.

5.  We conducted manipulation checks to ensure that the treatment conditions influenced respondents' perceptions of procedural justice during the encounter in the intended manner. The manipulation checks confirmed that the treatment conditions influenced perceptions of procedural justice in the expected directions.

6.  A measurement model containing all latent variables fit the data well (RMSEA = .067, CFI = .989, TLI = 0.986, WRMR = 1.08). The CFA loadings for anger ranged from .92 to .98, with a mean of .96. The loadings for the general outcomes ranged from .80 to .93, with a mean of .86. The loadings for the encounter-specific outcomes ranged from .75 to .95, with a mean of .92.

7.  The data for this study were collected in 2016, after the emergence of the Black Lives Matter movement in 2013–2014 but before the worldwide protests in response to the murder of George Floyd in 2020.

8.  In the model contrasting the effects of the positive and negative treatment conditions on the global outcomes, the regression coefficient for the effect of treatment on willingness to cooperate was $\beta = .05$ ($p = .487$) for those who observed a Black driver, and $\beta = -.10$ ($p = .162$) for those who observed a White driver. The multiple group analysis revealed that this was a statistically significant difference between coefficients. However, the substantive finding remains the same because the treatment did not have a statistically significant effect on the global measure of willingness to cooperate.

9.  Although the officer was not visible in the video, it is possible that respondents could have made inferences about his race based on his voice or speech patterns (Kushins, 2014; Massey & Lundy, 2001). Two respondents commented about the officer's race in an open-ended question at the end of the survey inviting feedback on the study. One respondent noted that the officer was White, and another wrote: "I do appreciate that the officer's race was not disclosed."

10. It is feasible in field trials to test positive interventions such as asking police officers to behave in a procedurally just manner when interacting with the public. It is much less feasible in field trails to test negative interventions such as asking police officers to treat people impolitely. Such studies would raise ethical issues, expose police leaders and politicians to significant criticism, and detract from the perceived legitimacy of police. Under such constraints, laboratory experiments provide a useful alternative for testing the effects of negative interventions.

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