

# Testing a Social Schematic Model of Police Procedural Justice

Forthcoming at *Social Psychology Quarterly*

doi: [10.1177/0190272518765134](https://doi.org/10.1177/0190272518765134)

**Justin T. Pickett**

School of Criminal Justice  
University at Albany, SUNY

**Justin Nix**

School of Criminology and Criminal Justice  
University of Nebraska at Omaha

**Sean Patrick Roche**

School of Criminal Justice  
Texas State University

## Abstract

Procedural justice theory increasingly guides policing reforms in the U.S. and abroad. Yet, the primary sources of perceived police procedural justice are still unclear. Building on social schema research, we posit civilians' perceptions of police procedural justice only partly reflect their personal and vicarious experiences with officers. We theorize perceptions of the police are anchored in a broader "relational justice schema," composed of views on how respectful, fair, and unbiased most people are in dealing with others. An individual's experiences with certain non-legal actors and perceived neighborhood environments should directly affect their relational justice schema, and indirectly affect their evaluations of police. Nevertheless, experiences with police, especially mistreatment by officers, should also affect perceived police procedural justice, and may moderate the effects of relational justice schema endorsement. We test our hypotheses in two studies with national samples. The findings strongly support a social schematic model of perceived police procedural justice.

**Keywords:** Relational schemas, procedural justice, policing, legal socialization, law

\*Direct correspondence to Justin T. Pickett, School of Criminal Justice, University at Albany, SUNY, 135 Western Avenue, Albany, NY 12222 e-mail ([jpickett@albany.edu](mailto:jpickett@albany.edu)), phone (803-215-8954). The authors are thankful to Joseph Hamm for his helpful comments on an earlier draft of this manuscript.

A movement is underway in the U.S. and other countries to reform policing in ways that increase public perceptions of police procedural justice (Hagan and Hans 2017). This movement is a response to the substantial evidence that one of the strongest predictors of civilians' willingness to cooperate with police, as well as felt moral obligation to obey the law, is their perceptions of the extent to which police decision-making is procedurally just—that is, respectful, fair, and unbiased (Tyler 1990). The prosocial effects of police procedural justice emerge in both observational (Bradford, Murphy, and Jackson 2014; Sunshine and Tyler 2003; Tyler and Jackson 2014) and experimental studies (Maguire, Lowrey, and Johnson 2017; Mazerolle et al. 2013a), and are largely invariant across different situations and social groups (Jackson et al. 2012; Jonathan-Zamir and Weisburd 2013; Wolfe et al. 2016).

At the same time, questions remain about the sources of civilians' perceptions of police procedural justice, especially their global—rather than encounter-specific—perceptions (Mazerolle et al. 2013b; Nagin and Telep 2017; Worden and McLean 2017; but see Tyler 2017). Results from recent experiments suggest that while officers' behavior in police-civilian encounters impacts civilians' *encounter-specific* perceptions and willingness to cooperate, it has much smaller effects on their global perceptions (Johnson et al. 2017; Maguire et al. 2017; Mazerolle et al. 2013a; Sahin et al. 2017). Other studies find that the sources of global perceptions may reside in individuals' social environments (Jackson et al. 2012), or at least *perceived* social environments, although the mediating mechanisms remain unclear (Gau et al. 2012; Nix et al. 2015).

In the present study, we build on insights from sociological and psychological research examining social schemas (Freeney, Cassidy, and Ramos-Marcuse 2008; Simons and Burt 2011) to develop a social schematic model of police procedural justice. In so doing, we answer recent

calls for additional research aimed at advancing understanding of how individuals form fairness perceptions for different groups (Barclay et al. 2017). Our theoretical model illuminates how individuals' interpersonal experiences *outside* of the context of policing may shape their evaluations of *police procedural justice*. We theorize that individuals' interactions with certain non-legal actors and exposure to adverse neighborhood conditions affect their development and endorsement of a "relational justice schema." This schema consists of the assumption that most people in society are respectful, fair, and unbiased in their dealings with others. Endorsing a relational justice schema should affect evaluations of police treatment. Experiences with police mistreatment may also moderate the effect of relational justice schema endorsement on perceived police procedural justice. We test this social schematic model in two studies using survey data collected from separate national samples.

Before detailing our methods and findings, we first review the literature on relational schemas, and describe the construct of a relational justice schema. We then discuss the social and environmental factors that should influence endorsement of this schema and explain how the schema should inform perceptions of police procedural justice.

## **SOCIAL SCHEMAS AND INTERPERSONAL RELATEDNESS**

Social schemas are generic cognitive representations of social phenomena; they consist of assumptions that simplify and accelerate information processing, and increase humans' efficiency in navigating complex social environments (Baldwin 1992; Bourdieu 1990). These working models constitute "internalized representations of the patterns inherent in past social interactions," and influence future perceptions, reactions, and behaviors by specifying "the regularities, patterns, or rules of everyday life" (Simons and Burt 2011:555). Schemas allow

people to avoid repeatedly having to formulate original perceptions and predictions for every new individual, group, or situation encountered (Freeney et al. 2008).

One important type of social schema is the relational schema, which represents “regularities in patterns of interpersonal relatedness” (Baldwin 1992:461). Relational schemas are individuals’ working cognitive models (or theories) of interactions and relationships, and reflect generalizations of past interpersonal experiences. These relational representations provide interpersonal scripts detailing other peoples’ interactive dispositions (or behavioral tendencies) in different situations. For example, one relational schema subject to considerable empirical scrutiny, especially as it relates to child development, is “insecure attachment”—the assumption that others will be unavailable, unresponsive, or unsupportive when needed (Collins 1996; Collins et al. 2006). Another relational schema that has received a great deal of attention is “hostile attribution bias”—the belief that other people generally want to exploit or do harm and can only be deterred if met with aggression (Dodge and Pettit 2003; Simons and Burt 2011).

Relational schemas and interpersonal scripts are sometimes limited to a specific type of relationship, such as romantic partnerships, but are frequently applicable to interpersonal interactions broadly (Bowlby 1973; Safran 1990). This is because lower-level schemas for particular relationships are generally embedded in higher-order, more abstract, relational schemas (Safran 1990). Indeed, over-generalizations of internal working models of others and relationships appear to be the rule rather than the exception (Bowlby 1973, Freeney et al. 2008; Main and Weston 1981). Thus, by relying on relational schemas based on frequent interactions and early relationships, individuals formulate general expectations about how others will behave toward them personally and toward others.

Because of the “generality of procedural justice” and its broad importance in social life (Lind and Tyler 1988:129), we argue that one important type of relational schema that individuals develop over time is a relational justice schema. This schema consists of beliefs about the extent to which people in society generally exhibit procedural justice in their dealings with others—that is, whether they tend to be respectful, fair, and unbiased.<sup>1</sup> What should motivate the development of such schematic beliefs is the strong natural desire to receive procedurally just treatment from both non-authorities and authorities, non-legal and legal. As Lind and Tyler (1988:140–41) explain, when evaluating others’ decisions in interpersonal contexts, people “appear always to make procedural justice judgments and these judgments are always important to them.” Fairness judgments are universally important because they help individuals establish social identification (Bradford, Murphy, and Jackson 2014) and estimate the risk of exploitation (Lind 2001). Indeed, researchers have found procedural justice perceptions are important in diverse interpersonal contexts, from dyadic disputes with friends to cooperative business alliances (Lind, Tyler, and Huo 1997; Luo 2008).

As discussed below, this relational justice schema should inform individuals’ procedural justice judgments for types of people and groups with whom they have only limited experience—that is, infrequent, brief, and/or variable interactions—such as police officers. By contrast, the schema should reflect individuals’ past interpersonal experiences with people encountered frequently and for an extended duration, especially those involving intimate others or the same parties over time, and/or occurring early in life (Sutherland 1947). In short, what should determine the degree to which individuals endorse a relational justice schema is their previous experiences with non-legal actors, such as parents, teachers, and neighbors.

## **EXPLAINING RELATIONAL JUSTICE SCHEMA ENDORSEMENT**

In this section, we outline social and environmental factors that likely influence relational justice schema endorsement. Dodge (2006:792–93) argues that individuals’ life experiences with unsupportive others and threatening conditions can “cumulate and interact to lead to hostile schemas that are stored in memory.” Supporting this viewpoint, extant research on relational schemas suggests social adversity, such as exposure to harsh parenting or negative interactions with neighbors, is associated with the development of more cynical schemas (De Wolff and van IJzendoorn 1997; Simons and Burt 2011; Simons et al. 2012; Simons et al. 2014; Sutton et al. 2014). The theoretical explanation for such effects is interpersonal experiences, social events, and community conditions all teach individuals life lessons and communicate messages promoting specific types of relational schemas (Simons and Burt 2011). Learning prosocial relational schemas appears to require exposure to supportive relationships and environments (Dodge 2006). Certain non-legal actors and environments are likely to exert the greatest influence on an individual’s relational justice schema.

*Treatment by parents and teachers.* Edwin Sutherland (1947:6–7) long ago emphasized that the effects interpersonal interactions exert on individuals’ understanding of the world depend on their frequency, duration, priority, and intensity. The most influential interactions are those that are frequent and enduring, happen early in life, and/or involve others who play an important role in one’s life. Interactions with parents (or caregivers) and teachers have these characteristics. For example, when attending school in childhood and adolescence, most individuals will have the same teacher for an entire semester or school year and interact with that teacher almost daily. Indeed, many studies have demonstrated that experiences with parents and teachers play a critical role in legal socialization (Trinkner and Cohn 2014; Tyler and Trinkner 2017; Wolfe,

McLean, and Pratt 2017). In the same way, the treatment individuals receive from their parents and teachers should heavily influence their schematic assumptions about whether other people in society are respectful, fair, and unbiased. This leads to the following hypothesis:

*Hypothesis #1. Exposure to procedurally just treatment from parents and teachers will increase relational justice schema endorsement—the assumption that most people in society are respectful, fair and unbiased in their interactions with others.*

*Perceived neighborhood environment.* Evidence suggests neighborhood environments influence individuals' development and refinement of relational schemas (Simons et al. 2012; Simons et al. 2014). As Simons and Burt (2011:556) emphasize, neighborhood conditions “teach a mutual set of lessons that are internalized as social schemas.” Adverse neighborhood circumstances—social and physical incivilities, low social cohesion, and weak informal social control—communicate messages about residents' interactive dispositions (Farrall, Jackson, and Gray 2009). These environmental and social cues represent the most frequent and enduring signals about neighborhood residents' behavioral tendencies, indicating they have little concern for others, are unpredictable, and untrustworthy (Skogan 1990; Sun et al. 2013). This should foster more cynical relational schemas (Simons and Burt 2011). By extension, neighborhood incivilities and low collective efficacy should undermine relational justice schema endorsement, and indirectly reduce perceived police procedural justice.

The perceived neighborhood environment is of particular theoretical importance because neighborhood conditions can only serve as signals about other residents' interactive dispositions if individuals are aware of them. Additionally, many neighborhood conditions, such as incivilities, are “in the eye of the beholder,” depending not just on individuals' environments, but also on how they interact with their environments—that is, “what [they] *do, see, and encounter*” (Farrall et al. 2009:98). To illustrate, perceptions of incivilities are related to objective indicators

of incivilities, but only imperfectly, and are also influenced by other factors, such as racial heterogeneity (Drakulich 2013; Jackson et al. 2017; Sampson and Raudenbush 2004). Not least, the effects of neighborhood conditions on policing attitudes should be mediated by individual-level perceptions of those conditions, which should be the proximate predictor (Jackson and Bradford 2009). In Chiricos and colleagues' (2001:323) words, "individual level factors operating through situated actors [are] at the heart of structural relationships."

Importantly, perceptions of incivilities and collective efficacy, regardless of their accuracy or source, should serve as persistent signals about neighbors' interactive dispositions.

We therefore test the following hypothesis:

*Hypothesis #2. Perceived adverse neighborhood conditions will be negatively related to relational justice schema endorsement.*

## **A SCHEMATIC MODEL OF POLICE PROCEDURAL JUSTICE**

*Schematic assessments of police.* The primary function of relational schemas is to help perceivers estimate how future interactions will unfold—how people will respond to and treat them, as well as others (Baldwin 1992; Safran 1990). Supporting this notion, a large and growing body of research has demonstrated that relational schemas affect how individuals perceive others and behave (de Castro et al. 2002; Fearon et al. 2010; Huang et al. 2008). Simons et al. (2014), for example, found that hostile attribution bias, a key type of relational schema, influenced subsequent situational definitions and behavior. Freeney and colleagues (2008) found adolescents' secure attachment schema was important for predicting how they responded to new



peers. In the same way, general schematic beliefs about whether most people are respectful and fair should be useful for formulating behavioral expectations for specific individuals and groups.

The forecasting value of relational schemas is greatest for interactions with unfamiliar people and groups (Freeney et al. 2008). As a result, individuals should rely most heavily on their schematic beliefs about procedural justice when judging the behavioral tendencies of people and groups with whom they have had insufficient interaction to develop strong experience-based perceptions. For most people, interactions with police in the context of law enforcement are very infrequent, brief, and variable, involving different officers each time. The same is true for many other types of criminal justice actors, such as judges. It is thus unlikely that civilians' perceptions of police or court procedural justice solely reflect their personal and vicarious experiences with these types of social control agents. Rather, these procedural justice judgments likely reflect broader schematic beliefs about how people treat each other in general.<sup>2</sup>

Consistent with a social schematic model of procedural justice, two previous studies have found sizeable correlations between procedural justice perceptions for police and court personnel. Baker and colleagues (2014) examined female inmates' perceptions of police and court procedural justice, and found perceived *police* procedural justice was, by far, the strongest correlate of perceived *court* procedural justice. Casper, Tyler, and Fisher (1988) reported similar findings for a sample of felony defendants. They interpreted their findings as suggesting that "aspects of police treatment (e.g., politeness and respect) spill over onto defendant evaluations of their experiences with courtroom personnel and their general sense of fair treatment" (Casper et al. 1988:498).

Rather than police "spill over," an alternative interpretation of the findings from these two studies is that people draw on their broader schematic beliefs when estimating the behavioral

tendencies of both police and court actors. If our logic is correct, then relational justice schema endorsement would represent a common cause of both types of procedural justice perceptions. In the current paper, we provide an initial test of whether people rely on broader relational schemas when evaluating criminal justice actors. We focus specifically on perceptions of police procedural justice, although we expect similar processes would underpin perceptions of court actors. Thus, we test the hypothesis that:

*Hypothesis #3. Endorsement of a relational justice schema will be positively related to perceived police procedural justice.*

*Effects of experiences with non-legal actors.* Per our theoretical model, individuals' experiences with non-legal actors should also affect their perceptions of police, albeit indirectly through relational justice schema endorsement. One recent survey provides preliminary evidence that treatment by non-legal actors affects evaluations of police. Trinkner and Cohn (2014) asked youths about the procedural justice exhibited by their parents, teachers, and police. The interrelationships between these three procedural justice scales were not reported in the article, which focused on a different question, but we contacted the authors to inquire about the associations. Consistent with a schematic model of procedural justice, the bivariate correlations were positive and sizable: parent versus police ( $r = .39, p < .05$ ), teacher versus police ( $r = .51, p < .01$ ). These bivariate associations suggest that how civilians perceive the police is a function of their prior experiences with non-legal actors. We extend this line of inquiry by testing the following hypothesis:

*Hypothesis #4. Procedurally just treatment from parents and teachers will be indirectly and positively related to perceived police procedural justice through greater relational justice schema endorsement.*

*Effects of perceived neighborhood environment.* A handful of prior studies have tested whether objective or perceived neighborhood conditions affect perceptions of police procedural

justice. Gau et al. (2012) found that while actual community conditions exerted little effect, perceived neighborhood social cohesion was positively associated with perceived procedural justice. Nix et al. (2015) found that perceived neighborhood collective efficacy was positively associated with perceived police procedural justice.

A larger literature has explored neighborhood effects on other types of policing attitudes, such as satisfaction, trust, and perceived anti-Black bias (Berg et al. 2016; Jackson et al. 2012; Reisig and Parks 2000; Sampson and Bartusch 1998; Wu, Sun, and Triplett 2009). Many studies have measured neighborhood conditions using individual-level perceptions rather than objective or aggregate indicators (Cao, Frank, and Cullen 1996; Jackson and Sunshine 2007; Xu, Fiedler, and Flaming 2005; Sprott and Doob 2009; Vogel 2011). The general finding has been that individual-level perceptions predict attitudes toward police and exert more consistent and stronger effects than objective or aggregate indicators. Similar findings have emerged in research comparing the effects of subjective and objective indicators of neighborhood conditions on other attitudinal phenomena, such as fear of crime (Chiricos, Hogan, and Gertz 1997; Farrall, Jackson, and Gray 2009; Hale 1996).

Most prior work has assumed that the effect of neighborhood conditions on policing attitudes reflects individuals holding police responsible for social problems like moral decline, and their experiences with officers (Jackson and Sunshine 2007; Wu et al. 2009). Our theoretical model suggests another avenue. Neighborhood conditions, if perceived, should affect individuals' schematic assumptions about how people generally treat each other in interactions and relationships (Sampson and Bartusch 1998; Simons and Burt 2011), which should, in turn, affect evaluations of police (Nix et al. 2015). This leads to the following hypothesis:

*Hypothesis #5. Perceived adverse neighborhood conditions will be indirectly and negatively associated with perceived police procedural justice through relational justice schema endorsement.*

*Effects of experiences with police.* Independent of relational justice schema endorsement, individuals' personal and vicarious experiences with the police should influence their perceptions of police procedural justice (Tyler 1990). Indeed, several studies have demonstrated that police behavior during encounters affects individuals' perceptions of police treatment, especially their *encounter-specific* perceptions of police procedural justice (Johnson et al. 2017; Mazerolle et al. 2013a; Reisig, Mays, and Telep forthcoming; Sahin et al. 2017). Worden and McLean (2017) found the effects of police behavior are asymmetrical, such that mistreatment has a larger effect than respect and fairness. Other researchers have likewise shown negative police contacts have a larger impact than positive ones on civilians' attitudes toward police (Skogan 2006). Collectively, this research suggests that civilians weight negative experiences with officers more heavily than positive ones in formulating their perceptions of police (Worden and McLean 2017).

Negative police experiences may also have an interactive effect with relational schema endorsement on perceptions of procedural justice. Theoretically, accumulated experiences with a specific type of person or group, such as police, should moderate the effect of relational schemas on attitudes toward that person or group. As individuals accumulate relevant experiences, they should gradually come to rely more on those experiences than on their general schematic beliefs when judging behavioral tendencies (PytlikZillig et al. 2017). This is especially likely when those experiences are weighted heavily for information value, which appears to be the case for negative experiences with police. In the context of policing, then, individuals who have more

personal or vicarious experiences with police mistreatment should be more likely to base their perceptions of police procedural justice on those experiences.<sup>3</sup> This leads to a final hypothesis:

*Hypothesis #6. Experience with police mistreatment will moderate the relationship between relational justice schema endorsement and perceived police procedural justice, reducing its positive effect on evaluations of the police.*

Figure 1 presents the full schematic model of police procedural justice. We test each of the hypotheses suggested by this model using two studies. Study 1 tests Hypotheses 3 and 6, our foundational hypotheses about the relationship between relational justice schema endorsement and perceived police procedural justice. Study 2 tests all six hypotheses, thereby replicating and extending the findings from Study 1.

[Figure 1 about here]

## **METHODS**

### **Data**

Prior studies of procedural justice have often used college samples (Johnson et al. 2017; Tankebe, Reisig, and Wang 2016; Wolfe 2011) or other convenience samples (Baker et al. 2015; Metcalfe et al. 2016; Pickett and Bontrager Ryon 2017; Tyler, Callahan, and Frost 2007). Recently, researchers examining procedural justice have begun using national online convenience samples, most commonly sampled from Amazon's Mechanical Turk (MTurk) (Gerber and Jackson 2013; Hamm, Trinkner, and Carr 2017; Tyler, Mentovich, and Satyavada 2014; Pedersen, Stritch, and Taggart 2017). We used MTurk samples for both of our studies.

MTurk is a leading crowdsourcing website on which "workers" can complete various human intelligence tasks (HITs) for payment (Sheehan and Pittman 2016). There are thousands of workers from different countries. "Requesters" post HITs and workers who qualify can choose whether to accept the HIT. A large literature has demonstrated the strengths of MTurk samples

for academic research (Buhrmester, Kwang, and Gosling 2011; Mason and Suri 2012; Paolacci and Chandler 2014; Shapiro, Chandler, and Mueller 2013; Simons and Chabris 2012). One strength is that MTurk samples are more diverse and representative than other types of convenience samples (Buhrmester et al. 2011). Another is that workers provide higher quality self-reports than participants in even the best probability samples, as indicated by passing comprehension checks, not speeding through questionnaires, having lower item-nonresponse, and less satisficing (non-differentiation) (Weinberg, Freese, and McElhattan 2014). Not least, the cost of conducting a survey on MTurk is relatively low (Sheehan and Pittman 2016). For these reasons, Hamm and colleagues (2017:1192) argued that when the “goal [is] to examine interrelationships among measured variables ... the use of ... MTurk is not only sufficient but potentially optimal given the trade-off between cost and representativeness.”

Using unweighted data from MTurk samples, Mullinix et al. (2015:122) successfully replicated both the direction and statistical significance of 29 (or 81%) of 36 treatment effects found in national probability samples. Similarly, Weinberg et al. (2014:307) reported a 70 percent replication rate with unweighted MTurk data. Even in nonexperimental studies, studies have found that using online convenience samples most often allows for valid relational inferences, even though univariate estimates are commonly biased (Ansolabehere and Schaffner 2014; Bhutta 2012; Pasek 2016; Simmons and Bobo 2015). The reason is that the conditions necessary to produce bias vary depending on the type of inference (Pasek 2016). “[R]elationships ... are resistant to sampling bias,” as long as the sample is diverse and unrestricted (or uncensored) (Blair, Czaja, and Blair 2013:102).<sup>4</sup> That is, “if a relationship is observed across the full range of the related variables, the measurement of the extent to which the two variables

covary is likely to be relatively accurate even if sampling is disproportionate at different levels of the variables” (Blair and Zinkhan 2006:5).

As with all MTurk surveys, we posted links to the surveys as HITs on the MTurk website, and workers were offered a small payment to participate. The survey for Study 1 was conducted in February 2017 with a nationwide sample of 1,009 U.S. adults. The survey for Study 2 was conducted in June 2017 with 339 U.S. adults.<sup>5</sup> Respondents in Study 1 were excluded from participating in Study 2 using survey qualifications. In both surveys, we followed the current best practices for research with MTurk samples, including limiting participation to workers with an approval rating on prior HITs of at least 95 percent, which improves response quality (Peer, Vosgerau, and Acquisti 2013). To minimize issues with non-naiveté (see Chandler, Mueller, and Paolacci 2014), we allowed respondents without an extensive MTurk history to participate. We set the experience threshold at only 50 prior HITs, which is the lowest possible threshold other than having none at all.

Of the 1,009 respondents who began the questionnaire for Study 1, 1,000 (99%) finished it. Of these respondents, 37 (4%) had item-missing data on one or more of the variables used in the analysis, leaving an analytic sample of 963. Of the 338 respondents who began the questionnaire for Study 2, 329 (97%) finished it. Eighteen respondents (5%) had item-missing data, leaving an analytic sample of 311. Descriptive statistics for both samples are presented in Appendix A.

## **Measures**

Both Studies 1 and 2 included measures of perceived police procedural justice, relational justice schema endorsement, and experiences with police mistreatment. Study 2 also included

measures of parent and teacher procedural justice and perceived neighborhood conditions. Below we describe each of these measures.

*Police Procedural Justice.* In both studies, respondents were presented with several Likert statements about how police in their community behave toward civilians (e.g., “Treat people with dignity and respect”; “Treat people fairly”) and asked to rate their level of agreement with each. These items were adapted from prior research (Mazerolle et al. 2013a; Nix et al. 2015; Tyler and Jackson 2014). Responses loaded on a single factor in both studies, with loadings ranging between .80 and .92. We averaged the responses to create indices ( $\alpha = .96$  and  $.95$  in Studies 1 and 2, respectively). Higher scores indicated greater police procedural justice.

*Relational Justice Schema.* We used original questions to measure schematic assessments of whether people tend to afford each other high-quality treatment in interactions and disputes. These questions were developed through pretesting with a college sample. In both studies, we instructed respondents to think about interactions between members of the public. They then rated their agreement with several Likert statements about these interactions (e.g., “In a dispute or argument, most people will listen to the other person”; “Most people are polite when dealing with others”; “Most people treat other people fairly”). In both studies, responses loaded on a single factor with loadings from .55 to .85. We averaged the responses to create mean indices ( $\alpha = .88$  and  $.93$  in Studies 1 and 2, respectively). Higher scores indicated greater endorsement of a relational justice schema.<sup>6</sup>

*Police Mistreatment.* In both studies, we used questions adapted from Weitzer and Tuch (2006:199) to measure personal and vicarious experiences with police mistreatment. Specifically, we asked respondents how often in their lifetime (1 = none, 4 = three or more times) the police had: 1) “Used insulting language toward you?” 2) “Used insulting language toward your close



friends or family members?” 3) “Stopped you on the street without good reason?” 4) “Stopped your close friends or family members on the street without good reason?” 5) “Used excessive force against you?” 6) “Used excessive force against your close friends or family members?” Responses to these six statements loaded on a single factor with loadings ranging from .62 to .85. We summed the responses to create indices ( $\alpha = .85$  and  $.88$  in Studies 1 and 2, respectively) measuring respondents’ total amount of personal and vicarious experience with these different types of police mistreatment.

*Parent Procedural Justice.* A measure of parent procedural justice was available only in Study 2. We instructed respondents to “think about how your PARENTS (or caregivers) treated you when you were growing up.” We asked them to rate their agreement (1 = strongly disagree, 5 = strongly agree) with Likert statements about parental procedural justice adapted from Trinkner and Cohn (2014) (e.g., “Showed concern for your rights as a family member”; “Treated you fairly”; “Listened to your opinions when making decisions that affect you”). Responses loaded on a single factor with loadings from .79 to .91. We averaged the responses to create a mean index ( $\alpha = .95$ ) where higher scores indicated greater perceived parental procedural justice.

*Teacher Procedural Justice.* A measure of teacher procedural justice was available only in Study 2. Respondents were told to “think about the SCHOOL TEACHERS you had growing up.” They rated their agreement (1 = strongly disagree, 5 = strongly agree) with Likert statements about teacher procedural justice adapted from Trinkner and Cohn (2014) (e.g., “Showed concern for students’ rights as members of the school community”; “Treated students fairly”; “Listened to students’ opinions when making decisions that affected them”). These responses also loaded on a single factor with loadings from .71 to .81. We averaged the

responses to create a mean index ( $\alpha = .92$ ). Higher scores indicated greater perceived teacher procedural justice.<sup>7</sup>

*Perceived Neighborhood Conditions.* Measures of perceived neighborhood disorder and collective efficacy were available only in Study 2. As with many prior studies of the relationship between perceived neighborhood conditions and attitudes toward police (Jackson and Sunshine 2007; Nix et al. 2015), our focus was specifically on individual-level perceptions of neighborhood conditions. To measure *perceived incivilities*, respondents were asked to rate how much of problem (1 = not a problem, 5 = a very big problem) each of the following was in their neighborhood: 1) “Litter and trash”; 2) “Graffiti”; 3) “Run-down houses”; 4) “Vacant houses”; 5) “Noisy neighbors”; 6) “Beggars on the street”; 7) “Teenagers hanging out on corners”; 8) “Public drinking.” Responses to these items loaded on a single factor with loadings ranging from .65 to .80. We averaged the responses to create an index ( $\alpha = .90$ ).

We adapted survey questions from Sampson, Raudenbush, and Earls (1997) to measure *collective efficacy*. First, we measured perceived neighborhood social cohesion by agreement (1 = strongly disagree, 5 = strongly agree) with several Likert statements (e.g., “This is a close-knit neighborhood”; “People in this neighborhood get along with each other”). These items loaded on a single factor with loadings ranging from .68 to .79, and thus were averaged to form an index ( $\alpha = .87$ ). Next, we measured perceived informal social control with several items asking about the perceived likelihood (1 = very unlikely, 5 = very likely) neighbors would intervene in different situations (e.g., “Teenagers were showing disrespect to an adult”; “A fight broke out near your home”). These items loaded on a single factor with loadings ranging from .69 to .81, and thus were averaged to form an index ( $\alpha = .85$ ). Finally, similar to previous studies (Nix et al. 2015),

we combined the two indices to generate an overall measure of *perceived collective efficacy*, on which higher scores indicated greater efficacy.

*Control Variables.* In both studies, we controlled for respondents' sex (*Female* = 1), race (*Non-Hispanic White* = 1), *Age* in years, *Education* (1 = high school or less, 5 = graduate degree), and political ideology (*Conservatism*: 1 = very liberal, 5 = very conservative). In addition, we controlled for whether respondents had previously been arrested (1 = *Prior arrest*) or had any close friends or family members who had been arrested (1 = *Vicarious arrest*). We also controlled for whether respondents had personally ever worked in law enforcement or had any close friends or family members who work in law enforcement (1 = *LE employment*). Additionally, we controlled for the respondents' region of residence. In Study 2, we were also able to control for the respondents' *Income* (1 = less than \$25K, 5 = \$100K or more).

### **Analytic Strategy**

In both studies, we used ordinary least squares regression to estimate the models, because all of the outcome variables, which were mean indices, were approximately normally distributed continuous variables.<sup>8</sup> As noted above, very few respondents in either study had missing data. Therefore, we used list-wise deletion of missing values for the main analysis.<sup>9</sup> Because there was evidence of heteroscedasticity, we estimated all models using robust standard errors. To formally test our mediation hypotheses, we used the product of the coefficient approach with resampling ( $k = 1,000$ ) and bias-corrected bootstrap confidence intervals (Hayes 2013; Zhao et al. 2010).

## **RESULTS**

### **Study 1**

Model 1 in Table 1 presents results from an OLS regression of respondents' global perceptions of police procedural justice on their endorsement of a relational justice schema and the controls. Consistent with our expectations, there was positive and significant association ( $b = .432, p < .001$ ) between endorsement of a relational justice schema and perceived police procedural justice. In fact, relational justice schema endorsement was the strongest predictor in the model of police procedural justice perceptions.

Model 2 in Table 1 incorporates the measure of experienced police mistreatment. The results revealed police behavior is consequential: respondents' prior personal and vicarious experiences with police mistreatment exerted a significant negative effect ( $b = -.076, p < .001$ ) on their perceptions of police procedural justice, net of relational justice schema endorsement and the controls. Inspection of the standardized coefficients shows the police mistreatment and relational justice schema variables were the strongest predictors in the model.

Model 3 tests our interaction hypothesis. Recall, we hypothesized greater experience with police mistreatment would weaken the effect of relational justice schema endorsement on perceived police procedural justice. Thus, the coefficient for the interaction term should be negative, indicating the positive effect of relational justice schema endorsement becomes weaker as experiences with police mistreatment increase. The coefficient for the interaction was in the correct direction, but was non-significant ( $b = -.014, p = .325$ ). Therefore, and contrasting our expectations, the evidence suggests regardless of respondents' negative experiences with police, greater relational justice schema endorsement increased perceptions of police procedural justice.

[Table 1 about here]

## **Study 2**

The first part of the analysis examined the factors associated with relational justice schema endorsement. Model 1 in Table 2 presents results from regressing endorsement of a relational justice schema on parent procedural justice, teacher procedural justice, perceived neighborhood conditions, and the controls. As hypothesized, parent procedural justice, teacher procedural justice, and perceived collective efficacy were all positively and significantly associated with relational justice schema endorsement ( $b = .156, p < .001$ ;  $b = .238, p < .001$ ;  $b = .092, p = .002$ ). Controlling for perceived collective efficacy, the direct association between neighborhood incivilities and relational justice schema endorsement was negative but non-significant ( $b = -.046, p = .435$ ). Nevertheless, previous studies suggest collective efficacy mediates the effect of neighborhood incivilities on other outcomes (Gibson et al., 2002). We tested for this possibility. There was a significant indirect association ( $b = -.040; p < .05, CI = -.090$  to  $-.013$ ) between neighborhood incivilities and relational justice schema endorsement, through perceived collective efficacy. Thus, as hypothesized, perceived adverse neighborhood conditions appear to reduce endorsement of a relational justice schema.

We now turn to the sources of perceived police procedural justice. Model 2 in Table 2 presents the results of regressing police procedural justice on parent procedural justice, teacher procedural justice, perceived neighborhood conditions, and the controls. Teacher procedural justice and neighborhood collective efficacy were both positively and significantly associated with global perceptions of police procedural justice (respectively,  $b = .352, p < .001$ ;  $b = .102, p = .005$ ). Both of these associations were reduced in magnitude in Model 3, which incorporated the relational justice schema variable. As in Study 1, relational justice schema endorsement was positively and significantly associated with global perceptions of police procedural justice ( $b = .247, p < .001$ ). Formal mediation tests revealed both teacher procedural justice and

neighborhood collective efficacy had significant indirect associations with perceived police procedural justice (respectively,  $b = .059$ ;  $p < .01$ , CI = .019 to .122;  $b = .023$ ;  $p < .05$ , CI = .007 to .050), through relational justice schema endorsement.

The final portion of the analysis examined the association between police mistreatment and global perceptions of police procedural justice and tested whether police mistreatment moderated the effect of relational justice schema endorsement. These results are shown in Models 1 and 2 in Table 3. First, as in Study 1, the results for Model 1 showed police mistreatment was negatively and significantly associated with perceptions of police procedural justice ( $b = -.080$ ,  $p < .001$ ). Also similar to Study 1, relational justice schema endorsement continued to predict evaluations of police ( $b = .244$ ,  $p < .001$ ), after controlling for personal and vicarious experiences with police mistreatment.

[Tables 2 and 3 about here]

Model 2 in Table 3 presents the results for the interaction between police mistreatment and relational justice schema endorsement. As in Study 1, the coefficient was negative ( $b = -.054$ ), but here it was statistically significant ( $p < .001$ ). To facilitate interpretation of the interaction, Figure 2 presents the adjusted predictions. The positive association between relational justice schema endorsement and perceived police procedural justice was weaker among respondents who reported having experienced more police mistreatment. Because we tested for this interaction in two studies, the false positive rate was inflated. Nevertheless, the interaction effect in Study 2 remained statistically significant when a Bonferroni-corrected alpha level of .025 was used. Even still, we suggest caution in interpreting the interactional findings pending replication in subsequent research.

[Figure 2 about here]

## DISCUSSION

Since Tyler's (1990) seminal work, many studies have concluded it behooves the police to be viewed as procedurally just by civilians (Donner et al. 2015; Mazerolle et al. 2013b). When civilians believe police officers demonstrate procedural fairness, they afford greater legitimacy to the institution of policing. Perceived legitimacy, in turn, increases compliance (Murphy, Tyler, and Curtis 2009), cooperation (Jackson et al. 2012), and acceptance of police decisions (Tyler and Huo 2002). These effects have been observed in the United States (Sunshine and Tyler 2003) and abroad (Jonathan-Zamir and Weisburd 2015; Reisig, Tankebe, and Meško 2014; Sun et al. 2017), and are largely invariant across many individual and situational characteristics (Jackson et al. 2012; Wolfe et al. 2017). In turn, scholars and reformers have called for agencies to adopt procedural justice as a guiding principle (President's Task Force 2015), and many agencies have begun administering procedural justice training to recruits and line-level officers (e.g., Skogan, Van Craen, and Hennessy 2015). Recent evidence, however, shows that officer treatment has only a weak effect on civilians' procedural justice perceptions, suggesting that other factors besides police behavior heavily influence these perceptions (Nagin and Telep 2017; Sahin et al. 2017; Worden and McLean 2017).

We theorized that civilians' perceptions of police procedural justice are anchored in a broader relational justice schema, which develops from both early-life and frequent interpersonal experiences with non-legal actors – especially those involving interactions of a relatively long duration with the same individual agents. This is a crucial consideration given that most people have minimal contact with police, and the officers with whom they do interact likely change from encounter to encounter. Results from two studies supported a social schematic model of

police procedural justice. First, respondents who reported receiving higher quality treatment from their parents and teachers growing up, and those who said they currently lived in neighborhoods with more favorable social conditions, all tended to endorse more strongly a relational justice schema. Second, relational justice schema endorsement was positively associated with perceived police procedural justice across both samples, and the relationship was substantial in magnitude.

### **Policy Implications**

The key policy implication of our findings is that, in addition to procedural justice training for officers, there may be other means of building trust between police and communities (President's Task Force 2015). Because people's perceptions of police fairness appear largely to be anchored in their broader perceptions of how people in society generally treat one another, the use of procedural justice by officers during encounters with civilians may represent just one way to impact police legitimacy (and ultimately, civilian compliance and cooperation) (MacQueen and Bradford 2015; Worden and McLean 2017). Other evidence-informed strategies may have equal or even larger effects. For example, combating neighborhood incivilities through situational interventions in hot spots (Braga and Bond 2008; Kochel, Burruss, and Weisburd 2016) may improve civilians' perceptions of their social surroundings, increasing relational justice schema endorsement, and leading to greater perceptions of police procedural justice and legitimacy. For this reason, a holistic approach to increasing police procedural justice—recognizing the many factors potentially influencing evaluations of police behavior—seems like the most promising path to improved police-community relations.



It is important to emphasize that we also found that police mistreatment was significantly and negatively associated with respondents' perceptions of police procedural justice. Moreover, experiencing police mistreatment reduced the effect of relational justice schema endorsement on perceptions of police procedural justice. Overall, personal and vicarious experiences with police mistreatment (e.g., use of insulting language, being stopped without good reason, and experiencing excessive force) seem strongly tied to global perceptions of police procedural justice. This suggests it may be more important for officers to *refrain from procedural injustice* than it is to *strive for procedural justice* (Nagin and Telep 2017; Skogan 2008; Worden and McLean 2017). The psychology of justice literature supports this conclusion (Brockner and Wiesenfeld 1996). Since experience with police mistreatment remained negatively associated with police procedural justice *while controlling for relational justice schema endorsement*, it is possible mistreatment erodes perceived police legitimacy.

There is also strong evidence that civilian disrespect toward the police is more common than police disrespect toward civilians, and sometimes leads officers to act disrespectfully in encounters (Mastrofski, Reisig, and McCluskey 2002; Reisig et al. 2004; Worden and McLean 2017). Thus, it may be essential to provide officers with additional instruction on how to maintain poise while interacting with disrespectful civilians (see e.g., Nix et al. 2017; Pickett and Bontrager Ryon 2017). Such training would be useful given the increasing prevalence of police body-worn cameras (Cubitt et al. 2017) and bystanders with smartphones (Brown 2016). Footage showing officers treating people unfairly can disseminate rapidly through news and social media, which increases vicarious exposure to police mistreatment (Goldsmith 2010; Sun et al. 2013; Weitzer 2002). Viewers who closely identify with the civilian(s) in the video or who feel vulnerable to police mistreatment—the affinity and vulnerability hypotheses in cultivation

research (see Roche, Pickett, and Gertz 2016)—may be especially affected. Again, given that mistreatment appears to be so strongly connected to civilians’ global perceptions of the police, it is imperative for officers to avoid disrespectful language (Voigt et al. 2017), excessive use of discretionary stops (Epp, Maynard-Moody, and Haider-Markel 2014; Gelman, Fagan, and Kiss 2007), and otherwise mistreating civilians.

### **Theoretical Implications**

Although we have focused on police procedural justice, the theoretical implications of our findings are much broader. The procedural justice paradigm is currently a dominant perspective for understanding interpersonal relations, human cooperation, and the legitimacy of authority (Tyler 2011). Studies have analyzed procedural justice perceptions as they pertain to a wide array of both non-legal and legal actors, as well as institutions. Examples include, but are not limited to, health care professionals, investment advisors, supervisors, employers, business partners (private, public, domestic, and international), corporate organizations, and court personnel (Baker et al. 2015; Chen, Brockner, and Greenberg 2003; Clay-Warner, Hegtvedt, and Roman 2005; Lind and Tyler 1988; Luo 2008, Tyler 1990, 2006, 2011; Tyler et al. 2007, 2014; Zhang and Jia 2010). Researchers have commonly taken a narrow view of procedural justice perceptions, assuming at least implicitly that perceptions for different types of actors are independent and only reflect experiences with those specific actors. Our theoretical model and findings suggest this is unlikely to be true.

Procedural justice perceptions for different types of actors—especially those encountered later in life, infrequently, and for a short duration—are likely to be strongly anchored in a broader relational justice schema, at least initially. As individuals gain more experience with a

specific type of actor (e.g., business partner, supervisor), their associated procedural justice perceptions for that actor should become progressively less anchored in schematic assessments and more strongly tied to the actual quality of treatment received from the actor (for a related discussion see PytlikZillig et al. 2017). Yet, for those types of actors who are encountered infrequently, for a short duration, and for which the individual agents constantly change—such as police officers and court personnel—general schematic assessments may continue to play a strong role in the formulation of procedural justice perceptions even after relevant experiences are gained. Nevertheless, in the case of legal actors, the situation may differ for repeat offenders who have frequent contact with the justice system.

Several associated theoretical possibilities warrant discussion. There is evidence that individuals' procedural justice perceptions for a given type of actor (e.g., police), whether accurate or not, affect their orientations toward the actor and behavioral dispositions (Kaiser and Reisig forthcoming; Tyler 2011; Tyler and Jackson 2014), which, in a reciprocal fashion, can influence the treatment they receive from the actor (Bottoms and Tankebe 2012; Pickett and Bontrager Ryon 2017; Worden and McLean 2017). This suggests that schema-based procedural justice perceptions for a specific type of actor may contribute to the subsequent development of experience-based perceptions consistent with the initial schematic assessments by shaping individuals' interactive tendencies for that type of actor.

Thus, civilians who strongly endorse a relational justice schema may initially approach police officers and court personnel with greater trust and more cooperative demeanors, because they anticipate these legal actors to be procedurally just. In turn, these civilians may receive better treatment from those actors (Nix et al. 2017). On the other hand, individuals who believe other people tend to be unjust may be unlikely to trust or cooperate with legal actors,

inadvertently insulting those legal actors or arousing their suspicions, and thus perpetuating a negative self-fulfilling prophecy.

There is some evidence that such a self-fulfilling process is at work. Augustyn (2016) analyzed changes in perceived police and court procedural justice in a sample of serious offenders, and found prior perceptions were “the strongest predictor of subsequent judgments of procedural justice.” Yet, there was also “negativity bias,” such that individuals who started with more negative perceptions experienced fewer positive changes in their perceptions over time. Similarly, Bradford and colleagues (2014:540) analyzed longitudinal data from civilians and found that “people who trusted in the procedural fairness of the police at Wave 1 were more likely to judge that officers treated them in a procedurally fair way during the [subsequent] encounter.” Both of these studies suggest that civilians’ procedural justice perceptions affect how they act toward police in subsequent encounters.

Related to the above possibility, if interactions with parents, teachers, and neighbors influence relational justice schema endorsement, as our findings suggest, then one way these interactions may affect life outcomes is through an inertia in procedural justice perceptions created by schematic assessments. Low-quality treatment by non-legal actors early in life may indirectly undermine procedural justice perceptions for legal actors by weakening relational justice schema endorsement. This, in turn, may increase the risk of negative encounters with legal actors later in life and the probability of developing negative experience-based perceptions. In this way, relational justice schema endorsement may represent another pathway through which the effects of individuals’ social environments on their life chances may accumulate over time. Although not focused on relational justice schema endorsement or procedural justice, a recent study by Burt and colleagues (2017) found that other social schemas affected by

experiences with social adversity, such as childhood racial discrimination, could have long-term effects on individuals' interactive tendencies and behavior.

### **Research Limitations**

Our studies have limitations that provide opportunities for future research. First, each study was cross-sectional and observational, which limits our ability to draw causal inferences about the relationships among variables or test for reciprocal effects. We have attempted to control for factors that we believe may be sources of omitted variable bias. Nevertheless, omitted variable bias is always a concern in observational studies. Additionally, while we believe the theorized direction of the effects reflects the most reasonable causal ordering, it remains possible police treatment colors the way civilians view their neighborhoods (see Kochel 2012). Police treatment may also influence general schematic beliefs about people generally. Such effects should be small, given that police contacts constitute only a small percentage of all contacts with others, even for serious offenders. Still, future research should aim to replicate our analyses with longitudinal data and test for reciprocal relationships.

Second, we used nonprobability samples. Evidence suggests MTurk samples are more representative than standard convenience samples (Buhrmester et al. 2011) and findings with MTurk samples most often replicate to the general population (Mullinix et al. 2015). Yet, MTurk samples do still differ considerably from the general U.S. population. For example, both Blacks and Latinos tend to be underrepresented in MTurk samples and are underrepresented in both of our studies. It is possible that the relationships we examine may vary by race, or other factors. Such effect heterogeneity is the main threat to external validity when using nonprobability samples to examine relationships between variables (Pasek 2016). Fortunately, prior research has found few instances of effect heterogeneity for correlates of procedural justice; the correlates of

police procedural justice appear to be largely invariant by race, at least in the U.S. (Sunshine and Tyler 2003; Wolfe et al. 2016).<sup>10</sup> Nevertheless, studies employing random sampling to address the research questions we considered would be an important addition to the literature.

Third, we measured neighborhood conditions using individual-level perceptions. As noted previously, prior research suggests that individuals' perceptions of neighborhood conditions are often inaccurate and influenced by such factors as racial heterogeneity (Drakulich 2013; Quillian and Pager 2010; Sampson and Raudenbush 2004). There is thus a need for future research that includes both perceptual and objective measures of neighborhood conditions and uses multi-level models to examine whether these factors exert similar effects on relational justice schema endorsement.

### **Future Research Directions**

A number of questions remain unaddressed. First, because prior research suggests that negative experiences with police exert a much larger effect than positive experiences on civilians' perceptions (Worden and McLean 2017), we focused on prior experiences with police mistreatment. Researchers seeking to build on our study might instead explore whether positive experiences with police exert an independent effect on perceived police procedural justice, net of relational schema endorsement and experiences with police mistreatment. Like negative experiences, positive experiences may also moderate the effect of relational schema endorsement on perceptions of police procedural justice. Future studies should test this possibility.

Second, other adverse social conditions, whether real or perceived, such as neighborhood crime, peer criminality, and racial discrimination, may influence endorsement of relational justice schemas (Burt, Lei, and Simons 2017; Simons and Burt 2011). Certainly, exposure to

systemic racial discrimination would be a powerful indicator to individuals that people are not generally unbiased or fair. Subsequent studies should test the effects of these and other social experiences on relational justice schema endorsement.

As well, researchers should explore whether perceptions of police procedural justice continue to be associated with other legal outcomes, after controlling for individuals' endorsement of a relational justice schema. As Nagin and Telep (2017:18) explain, the associations identified in prior work “among perceptions of procedurally just [police] treatment, perceptions of legitimacy, and compliance may be a reflection of third common causes, such as individual stakes in conformity or community effects.” Relational justice schema endorsement may also be a common cause of police procedural justice, legitimacy, and compliance.

Finally, people who are schematic are more likely to interpret ambiguous information as consistent with their schema-based expectations (Baldwin 1992:479). Future research should thus explore whether ambiguous police behavior is more likely to be interpreted as respectful or disrespectful depending on people's relational justice schema endorsement. One method for testing this question would be to conduct experiments using videotaped police interactions, where the ambiguousness of police behaviors is randomized (see Maguire et al. 2017).

## **CONCLUSION**

In closing, we reiterate that, particularly in the field of policing, procedural justice has become highly salient and is the focus of ongoing reform efforts. Indeed, the phrases “procedural justice” and “procedurally just” were mentioned 48 times in the final report by the President's Task Force on 21<sup>st</sup> Century Policing. Our findings suggest civilians' perceptions of police procedural justice are a function of their broader social environments as well as police behavior.

Accordingly, the return on investment for police reform efforts may be less than expected, unless efforts are also made to address other factors affecting evaluations of police.



## NOTES

1. The relational justice schema should consist of beliefs about the degree of procedural *justice* (as distinct from injustice) exhibited by others in society during interpersonal interactions.
2. Certainly, experiences with police may have an influence on schematic assessments of people generally, but such effects should be small given the infrequency of police contact, even for serious offenders, compared to daily interactions with parents, teachers, friends, and neighbors. We return to this possibility in the conclusion.
3. Frequency of contact with police officers varies, with some groups (e.g., Black males) having more frequent contact (Weitzer and Tuch 2006), which may lead them to rely more heavily on police-specific experiences in evaluating the police.
4. As Blair and colleagues (2013:102) emphasize, “the heaviest burden on a sample comes when the key research objective is to estimate univariate characteristics of a population, such as means or proportions, with some level of precision.”
5. The different sample sizes in the two studies reflect the available resources at the time the surveys were conducted.
6. In Study 1, the questions about police procedural justice were included in the questionnaire before those about relational justice and separated by pages with other questions. We counterbalanced the question order across studies, using the opposite ordering in Study 2, and presenting the police questions last.
7. The correlation between parent and teacher procedural justice was  $r = .395$ , that between parent and police procedural justice was  $r = .259$ , and that between teacher and police procedural justice was  $r = .378$ .

8. Perceived police procedural justice was an outcome variable in both studies, but relational justice schema endorsement was an outcome variable only in Study 2. The respective measures of symmetry were as follows: perceived police procedural justice (Study 1: skewness =  $-.556$ , kurtosis =  $2.858$ ; Study 2: skewness =  $-.274$ , kurtosis =  $2.572$ ); relational justice schema (Study 2: skewness =  $-.362$ , kurtosis =  $3.279$ ). In supplementary models, instead of using mean indices, we measured the respective variables using predicted scores from the factor analyses. We obtained substantively identical results. We also estimated the models using additive indices. Again, the results were substantively identical (available upon request).

9. In supplementary analyses, we re-estimated the models using multiple imputation ( $m = 25$ ) and obtained substantively identical findings (available upon request).

10. In supplementary models, we tested whether any of the hypothesized relationships (those shown in Figure 1) between our independent, intervening, and dependent variables varied by race in either study. None of the interaction effects were statistically significant.

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## BIOS

**Justin T. Pickett** is an associate professor of criminal justice at the University at Albany, SUNY. His research interests include public opinion, survey research methods, theories of punishment, and police-community relations. Recent articles appear in *Criminology*, *Justice Quarterly*, and the *Annual Review of Criminology*.

**Justin Nix** is an assistant professor in the School of Criminology and Criminal Justice at the University of Nebraska Omaha. His research interests include policing, procedural justice, and legitimacy. Recent articles appear in *Justice Quarterly*, *Law and Human Behavior*, and *Crime & Delinquency*.

**Sean Patrick Roche** is an assistant professor of criminal justice at Texas State University. His research interests include offender decision-making, policing, the impact of social technologies, and public opinion about criminal justice issues. Recent articles appear in *Criminology*, *Justice Quarterly*, and the *Annual Review of Criminology*.

**Table 1. OLS Models Predicting Perceived Police Procedural Justice (Study 1)**

Variables	Model 1			Model 2			Model 3		
	<i>b</i>	SE	$\beta$	<i>b</i>	SE	$\beta$	<i>b</i>	SE	$\beta$
Schema X mistreatment	—	—	—	—	—	—	-.014	.014	-.042
Mistreatment by Police	—	—	—	-.076***	.010	-.279	-.080***	.011	-.291
Relational justice schema	.432***	.046	.308	.361***	.047	.258	.366***	.046	.261
Female	.088	.057	.045	.025	.056	.013	.021	.056	.011
White	.140*	.071	.060	.063	.068	.027	.062	.068	.027
Age	.006**	.002	.081	.005*	.002	.062	.004*	.002	.060
Education	-.007	.022	-.009	-.018	.021	-.024	-.017	.021	-.021
Conservatism	.198***	.027	.227	.179***	.026	.204	.177***	.026	.203
Prior arrest	-.225*	.091	-.088	-.095	.086	-.037	-.101	.086	-.039
Vicarious arrest	-.143*	.063	-.073	-.046	.061	-.024	-.040	.061	-.021
LE employment	.115	.065	.049	.155*	.063	.066	.153*	.063	.065
Midwest	.001	.089	.001	-.003	.086	-.001	-.006	.086	-.002
South	.030	.079	.015	.039	.077	.019	.041	.077	.020
West	-.051	.087	-.022	-.037	.085	-.016	-.037	.084	-.016
<i>R</i> -squared		.217			.280			.281	
<i>N</i>		963			963			963	

*ABBREVIATIONS:* *b* = unstandardized regression coefficient; SE = robust standard error;  $\beta$  = standardized coefficient.

\**p* < .05; \*\**p* < .01; \*\*\**p* < .001 (two-tailed).

**Table 2. OLS Models Predicting Relational Justice Schema and Perceived Police Procedural Justice (Study 2)**

Variables	DV: Relational Justice Schema			DV: Perceived Police Procedural Justice					
	Model 1			Model 2			Model 3		
	<i>b</i>	SE	$\beta$	<i>b</i>	SE	$\beta$	<i>b</i>	SE	$\beta$
Relational justice schema	—	—	—	—	—	—	.247***	.068	.204
Teacher procedural justice	.238***	.056	.241	.352***	.066	.296	.294***	.066	.247
Parent procedural justice	.156***	.041	.221	.047	.048	.055	.009	.048	.010
Perceived collective efficacy	.092**	.030	.173	.102**	.036	.158	.079*	.035	.123
Perceived incivilities	-.046	.059	-.043	-.034	.070	-.026	-.022	.069	-.017
Female	-.053	.083	-.034	-.118	.098	-.061	-.104	.096	-.055
White	-.079	.092	-.045	.053	.109	.025	.072	.107	.034
Age	.008*	.004	.115	.008*	.004	.102	.006	.004	.078
Education	.016	.034	.025	-.014	.040	-.018	-.018	.039	-.023
Income	.022	.034	.035	.086*	.040	.113	.080*	.039	.106
Conservatism	.014	.035	.021	.153***	.042	.185	.149***	.041	.181
Prior arrest	.017	.105	.009	-.142	.124	-.061	-.146	.122	-.063
Vicarious arrest	-.052	.085	-.033	-.219*	.101	-.115	-.206*	.099	-.109
LE employment	-.117	.097	-.063	-.069	.115	-.031	-.040	.113	-.018
Midwest	.043	.128	.022	.005	.151	.002	-.005	.148	-.003
South	.087	.118	.053	.019	.140	.010	-.002	.137	-.001
West	.034	.126	.019	-.062	.148	-.028	-.070	.145	-.032
<i>R</i> -squared		.261			.253			.323	
<i>N</i>		311			311			311	

*ABBREVIATIONS:* *b* = unstandardized regression coefficient; DV = dependent variable; SE = robust standard error;  $\beta$  = standardized coefficient.

\**p* < .05; \*\**p* < .01; \*\*\**p* < .001 (two-tailed).

**Table 3. Full Models Predicting Perceived Police Procedural Justice with Police Mistreatment and Interaction of Police Mistreatment and Relational Justice Schema (Study 2)**

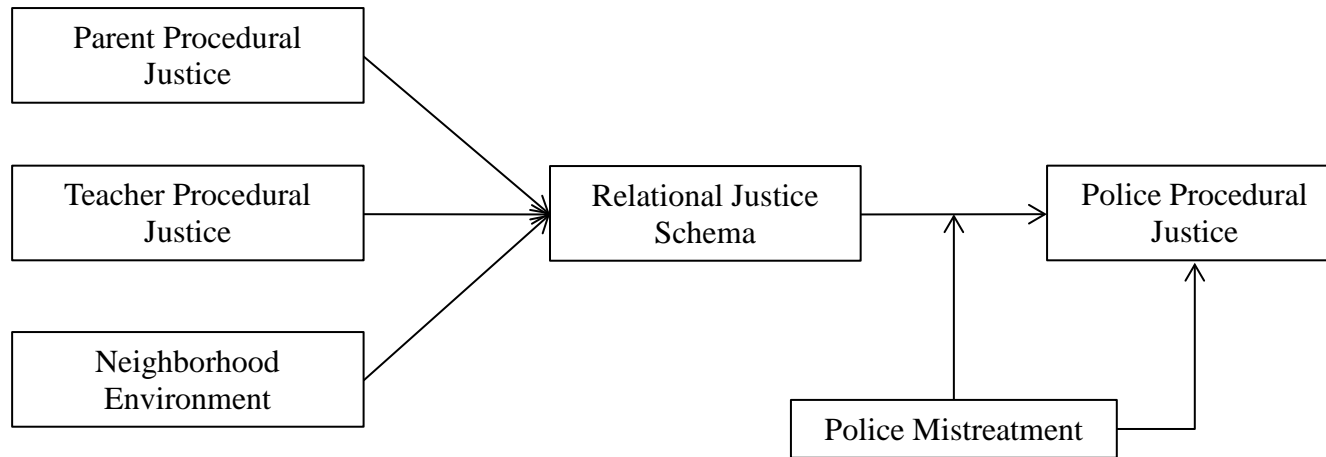
Variables	Model 1			Model 2		
	<i>b</i>	SE	$\beta$	<i>b</i>	SE	$\beta$
Schema X mistreatment	—	—	—	-.054***	.016	-.171
Mistreatment by Police	-.080***	.015	-.291	-.102***	.016	-.372
Relational justice schema	.244***	.065	.202	.233***	.064	.193
Teacher procedural justice	.254***	.064	.213	.247***	.063	.208
Parent procedural justice	-.002	.046	-.002	-.001	.046	-.001
Perceived collective efficacy	.067*	.034	.104	.072*	.033	.111
Perceived incivilities	.074	.068	.057	.096	.068	.073
Female	-.190*	.094	-.099	-.200*	.092	-.104
White	.050	.103	.023	.056	.101	.027
Age	.004	.004	.052	.003	.004	.032
Education	-.031	.038	-.041	-.025	.037	-.033
Income	.082*	.037	.107	.072	.037	.094
Conservatism	.148***	.039	.180	.151***	.038	.183
Prior arrest	-.011	.119	-.005	-.017	.117	-.007
Vicarious arrest	-.125	.096	-.066	-.119	.094	-.063
LE employment	.029	.109	.013	.034	.107	.015
Midwest	-.010	.142	-.004	-.040	.139	-.017
South	.023	.131	.012	.004	.129	.002
West	-.057	.139	-.026	-.088	.137	-.040
<i>R</i> -squared		.381			.405	
<i>N</i>		311			311	

ABBREVIATIONS: *b* = unstandardized coefficient; SE = robust standard error;  $\beta$  = standardized coefficient.

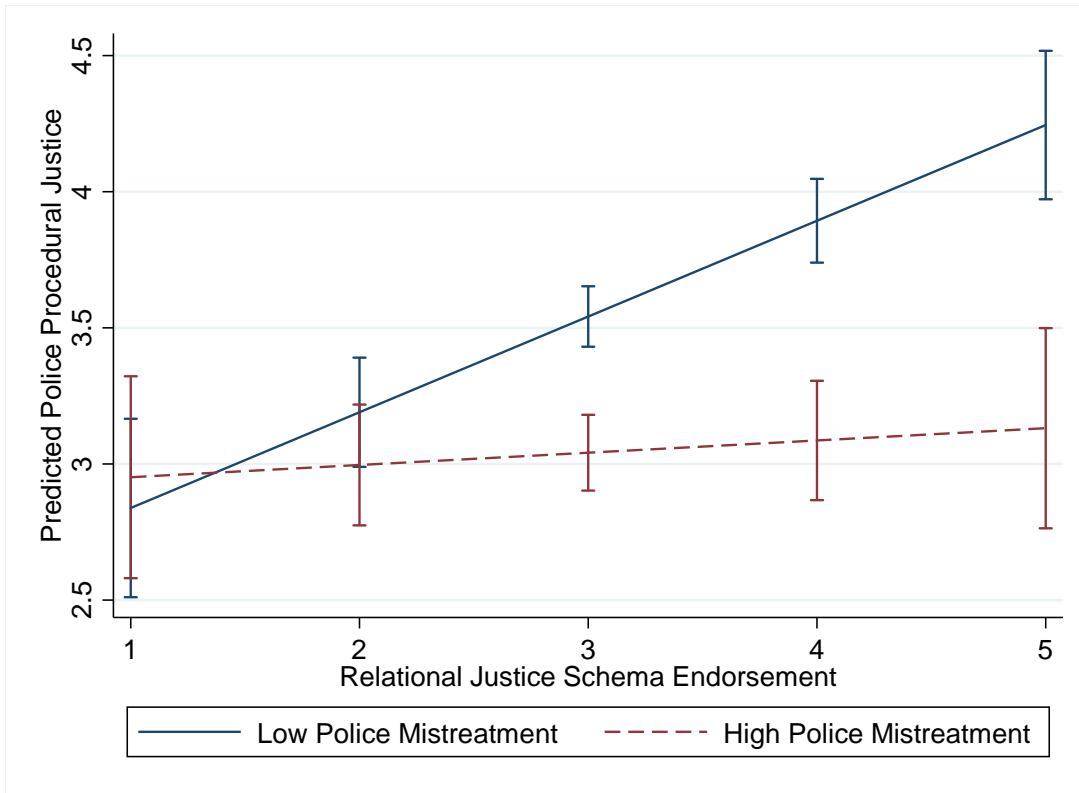
\**p* < .05; \*\**p* < .01; \*\*\**p* < .001 (two-tailed).

**Figure 1. Social Schematic Model of Perceived Police Procedural Justice**

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**Figure 2. Interaction of Police Mistreatment and Relational Justice Schema Endorsement**



NOTES: Figure shows adjusted predictions with 95% confidence intervals. “Low” and “High” police mistreatment are defined as one standard deviation below and above the mean. Relational Justice Schema Endorsement is an additive index with values ranging from 1 to 5.



## Appendix A. Descriptive Statistics for Both Samples

Variable	Study 1		Study 2	
	Mean	SD	Mean	SD
Perceived police procedural justice	3.454	.974	3.431	.951
Mistreatment by Police	2.426	3.558	2.193	3.466
Relational justice schema	3.361	.695	3.251	.788
Teacher procedural justice	—	—	3.562	.799
Parent procedural justice	—	—	3.516	1.120
Perceived collective efficacy	—	—	6.741	1.474
Perceived incivilities	—	—	1.627	.731
Female	.504	—	.563	—
White	.777	—	.717	—
Age	39.464	12.903	35.399	11.529
Education	3.259	1.249	3.235	1.244
Income	—	—	2.695	1.252
Conservatism	2.735	1.115	2.688	1.154
Prior arrest	.174	—	.212	—
Vicarious arrest	.491	—	.498	—
LE employment	.222	—	.228	—
Midwest	.210	—	.212	—
South	.364	—	.357	—
West	.236	—	.251	—
<i>N</i>		963		311

ABBREVIATIONS: LE = law enforcement; SD = standard deviation.