

# Is the Effect of Procedural Justice on Police Legitimacy Invariant? Testing the Generality of Procedural Justice and Competing Antecedents of Legitimacy

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Published online: 29 July 2015  
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## Abstract

**Objectives** This study tests the generality of Tyler’s process-based model of policing by examining whether the effect of procedural justice and competing variables (i.e., distributive justice and police effectiveness) on police legitimacy evaluations operate in the same manner across individual and situational differences.

**Methods** Data from a random sample of mail survey respondents are used to test the “invariance thesis” (N = 1681). Multiplicative interaction effects between the key antecedents of legitimacy (measured separately for obligation to obey and trust in the police) and various demographic categories, prior experiences, and perceived neighborhood conditions are estimated in a series of multivariate regression equations.

**Results** The effect of procedural justice on police legitimacy is largely invariant. However, regression and marginal results show that procedural justice has a larger effect on trust in law enforcement among people with prior victimization experience compared to their counterparts. Additionally, the distributive justice effect on trust in the police is more pronounced for people who have greater fear of crime and perceive higher levels of disorder in their neighborhood.

**Conclusion** The results suggest that Tyler’s process-based model is a “general” theory of individual police legitimacy evaluations. The police can enhance their legitimacy by ensuring procedural fairness during citizen interactions. The role of procedural justice also appears to be particularly important when the police interact with crime victims.

**Keywords** Procedural justice · Fairness · Police legitimacy · Trust · Obligation to obey · Process-based model · Distributive justice · Police effectiveness

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## Introduction

The maintenance of police legitimacy in the eyes of the public is a foundational element of governance in democratic societies (Beetham 1991; Weber 1946) and has been the focus of a growing body of research (Mazerolle et al. 2013a, b; Tankebe 2014; Tyler 2003). The meaning of police legitimacy goes well beyond general public support, as Braga et al. (2014, p. 2) note, by taking into account “public willingness to recognize and defer to official authority.” Legitimacy of the police is important because it can deliver a host of crime control benefits including greater citizen compliance with the law, acceptance of police decisions, and public cooperation (Murphy et al. 2008; Reisig et al. 2007; Tyler 1990; Tyler and Huo 2002). Accordingly, understanding the antecedents of legitimacy has become a primary concern of research. Tyler’s (1990) theory of procedural justice, or the process-based model of policing, provides the framework that guides much of this line of inquiry. Research consistently reveals that perceptions of procedural justice—the fairness and evenhandedness of police procedures—are the main precursor to police legitimacy. Competing variables, such as distributive justice and police effectiveness, are routinely found to be less important in predicting police legitimacy evaluations (Reisig et al. 2007; Tyler 1990; Tyler and Huo 2002).

The problem, however, is that the literature is less clear on whether the effect of procedural justice on legitimacy operates in the same manner for all individuals. The importance of addressing this gap in the literature is based on both the theoretical and practical implications surrounding the issue. Tyler argues that the social–psychological benefits of procedural justice (i.e., it communicates status recognition, offers transparency, and provides respect to people) impact evaluations of police legitimacy equally well for all citizens by transcending individual and cultural differences (Tyler 1990; Tyler and Huo 2002). Evidence accumulated to date concerning this “invariance thesis” is mixed, with a majority of studies speaking to cultural invariance by testing the scope of the process-based model outside of the US (Jackson et al. 2012a; Jonathan-Zamir and Weisburd 2013; Hinds and Murphy 2007; Mazerolle et al. 2012, 2013a, b; Reisig et al. 2012, 2014; Tankebe 2008, 2009a, b). Considerably less attention has focused on fundamental questions such as whether procedural justice is related to legitimacy to the same degree for racial minorities and Whites, victims in comparison to non-victims, or for individuals in different neighborhood contexts (Gau et al. 2012; Jackson et al. 2012b; Taylor et al. 2014; Tyler and Wakslak 2004). Furthermore, limited research attends to whether other factors (e.g., assessments of police effectiveness) are always less important predictors of legitimacy for all individuals. These issues—the invariance thesis and theoretical comprehensiveness—speak directly to the generality of Tyler’s framework. On a more practical level, however, knowing whether procedural justice judgments are equally important for various subgroups of people has important policy implications. On one hand, such evidence would suggest that a process-based approach to policing may be a viable strategy for improving police and minority-community relations (see Tyler 1990, 1994, 2004; Willis 2014). On the other hand, results suggesting that procedural justice matters less or other factors matter more for particular people would inform evidence-based approaches to police–community interactions.

The present study moves the procedural justice and legitimacy literature forward by accomplishing three primary objectives. Using a random sample of 1681 mail survey respondents from a mid-sized urban city, we first provide a preliminary test of the comprehensiveness of procedural justice theory by examining whether procedural fairness

perceptions have a stronger influence on police legitimacy than competing perspectives. Second, we test whether procedural justice has an invariant effect on legitimacy across various demographic categories, past criminal justice-related experiences, and perceived neighborhood conditions. Third, we explore whether the effects of competing antecedents are conditioned by these same factors. This step allows us to further test to scope of Tyler's framework by determining if competing antecedents are better predictors of legitimacy under certain conditions. In the end, the overarching purpose of the present study is to assess the invariance of procedural justice theory and the circumstances under which competing frameworks may predict legitimacy to greater or lesser degree.

## Police Legitimacy

Legitimacy has been defined in a variety of ways, but Tyler (2004, pp. 86, 87) captures it succinctly by arguing that it is “the belief that the police are entitled to call upon the public to follow the law and help combat crime and that members of the public have an obligation to engage in cooperative behaviors.” Legitimacy is the view that the police have appropriate authority to enforce laws concerning individual behavior, to maintain public order, and to make decisions that are right for the community. This feeling leads people to feel obligated to obey the police and the law. Drawing on Weber's vision of legitimacy, Tyler suggests that compliance stems not so much from instrumental concerns about avoiding punishment but more so from people's normative orientation toward the ethical and moral responsibility they have to defer to and obey authority figures such as the police (Sunshine and Tyler 2003; Tyler 1990; Tyler and Huo 2002). Trust in the character and motivations of an authority are also often considered a component to police legitimacy (Tyler and Huo 2002). The public expects the police to uphold the morals of the larger community and engage in benevolent decision making that takes the community's best interests into consideration (Jackson and Sunshine 2007; Jackson et al. 2012a, b; Tyler and Jackson 2013). In this way, legitimacy reflects the idea that the public feels obligated to obey the police and has trust and confidence in their authority.

It is important to note that one of the most contested aspects of Tyler's (1990) procedural justice theory in recent years has been the conceptual definition of legitimacy. Bottoms and Tankebe (2012; see also, Beetham 1991; Tankebe 2013) draw heavily from political scientists' views of authority legitimacy and argue that it is important to distinguish between “dull compulsion” and “justified authority.” In their view, police legitimacy goes beyond obligation to obey and represents issues such as lawfulness and shared values. Jackson et al. (2012a, b; Tyler and Jackson 2014) also suggest that true evaluations of legitimacy may reflect normative or moral alignment. This is an important part of the legitimacy literature and the debate is sure to continue for some time. We focus on the two-part conceptualization of legitimacy because previous studies tend to use either obligation to obey or trust (or both) to measure the concept (see, e.g., Nix et al. 2015; Sargeant et al. 2014; Tyler 2004, 2005; Tyler and Jackson 2014). Research has also shown that obligation to obey and trust may be separate components that tap into conceptually meaningful aspects of police legitimacy evaluations (Gau 2011, 2014; Maguire and Johnson 2010; Reisig et al. 2007). Given that our study's purpose is to assess the invariance of procedural justice on legitimacy, it is necessary to explore the effect of procedural justice on two of the most commonly used measures of the concept—obligation to obey and trust. This affords us the best opportunity to compare our results to previous findings and situate our study in the larger literature. In short, our study does not empirically address the conceptualization of legitimacy. Rather, we seek to understand whether procedural justice is

equally important in terms of predicting all individuals' legitimacy evaluations—as conceptualized within procedural justice theory and measured in the bulk of the literature (Tyler 1990; Tyler and Huo 2002).

Feelings of obligation concerning deference to the police are important because they serve a self-regulatory function (Tyler 1990, 2003). That is, legitimacy acts as a social control mechanism that breeds voluntary compliance with the law and police. Research shows that citizen evaluations of legitimacy are positively related to numerous beneficial outcomes such as greater long-term compliance with the law, cooperation with the police, and acceptance of police decisions (Piquero et al. 2005; Reisig et al. 2007; Sunshine and Tyler 2003; Tyler 1990; Trinkner and Cohn 2014; Tyler and Huo 2002). Given the importance of the concept, a considerable amount of research attention has focused on the antecedents of police legitimacy.

### Procedural Justice and Competing Antecedents of Legitimacy

Tyler's (1990; see also Tyler and Huo 2002) process-based model suggests a direct relationship between perceived procedural justice and citizens' views of police legitimacy. The theoretical foundation for his framework is based on Thibaut and Walker's (1975) classic work revealing that people are more inclined to accept undesirable outcomes if the process used to arrive at such outcomes is perceived as fair (see also, Lind and Tyler 1988, 1992).

The Tylerian version of procedural justice theory stipulates that people base their assessments of police fairness on the perceived quality of police decision-making and interpersonal treatment of citizens (Jonathan-Zamir et al. 2013; Sunshine and Tyler 2003; Tyler 1990, 2003; Tyler and Huo 2002). More specifically, police decisions are viewed as fair when citizens are given the opportunity to express their views during officers' decision-making processes. Allowing such meaningful participation communicates status recognition to citizens and reaffirms their self-worth by demonstrating that officers value their social position in the larger community and honestly care about their opinions. Furthermore, police are seen as procedurally fair when their decisions are based on objective, unbiased indicators and by clearly explaining to citizens the reasons for their decisions. Such transparency encourages citizens to view the police as neutral decision-makers. Officers' procedures are also viewed as fair when they treat citizens with respect and dignity. Quality interpersonal treatment of this sort is perceived as fair because it conveys to citizens that the police care about their well-being.

Competing frameworks of police legitimacy focus on the public's instrumental concerns regarding outcome distributional fairness and satisfaction with police performance. The distributive justice model, for example, links legitimacy evaluations to citizens' assessments of whether the police allocate services and outcomes equally regardless of individual differences such as race or socioeconomic position (Tyler 1990, 2003, 2005). The police performance model stipulates that public evaluations of legitimacy are guided by the perceived effectiveness of the police in fighting crime (see, e.g., Tyler 2005; Wilson and Kelling 1982). Both utilitarian perspectives focus on *outcomes* by suggesting that the basis of police legitimacy is found in either the distributional fairness of police decisions or the quality of officer outputs such as their ability to drive down crime (Jonathan-Zamir and Harpaz 2014). Of course, this stands in contrast to the procedural justice model which

emphasizes the role of normative concerns regarding the fairness of police *processes* as the key antecedent to police legitimacy.<sup>1</sup>

Research provides strong empirical support for the proposition that process-based issues of fairness are the primary predictor of police legitimacy (Jonathan-Zamir and Weisburd 2013; Murphy et al. 2008; Nix et al. 2015). For example, Sunshine and Tyler (2003) analyzed two samples of New York City residents and showed that the effect of procedural fairness on legitimacy was twice as large as the distributive justice effect and almost five times larger than the influence of police performance (see also Jackson et al. 2012a, b; Sargeant et al. 2014; Tyler 1990, 2005; Tyler and Huo 2002). These findings partially support the comprehensiveness of Tyler's framework—procedural justice withstands the potential confounding influence of alternative explanations of legitimacy and outpaces the predictive capacity of such frameworks. Left largely unexplored is the extent to which such findings apply across various groups of people or circumstances. This brings us to a discussion of one of the primary theoretical propositions contained in Tyler's process-based model.

### *The Invariant Effect of Procedural Justice on Legitimacy*

Procedural justice is offered as a general social–psychological explanation of how people evaluate authority figures (Lind and Tyler 1988, pp. 129–130, 135–145; Thibaut and Walker 1975; Tyler 1990, p. 157; 2004, p. 95; Tyler and Huo 2002, pp. 177–178). Normative beliefs concerning what constitutes fair procedures are argued to be a relatively universal psychological trait (Lind and Tyler 1988; Tyler 1994, pp. 813–814, 827–828; Tyler et al. 1997, pp. 207, 239). Regardless of other individual differences, little variation should exist among people's beliefs about how authorities *should* behave procedurally. An analysis by Tyler (1994) revealed no differences in the criteria used to evaluate authority fairness across ethnicity, gender, education, age, income, or ideology. As Tyler (2000, p. 998) suggests, “Fortunately, ethnicity and other demographic characteristics seem to have very little influence on either whether people care about procedural fairness or on how people evaluate fairness of procedures.” As such, the influence of procedural fairness on individuals' judgments of police legitimacy is argued to operate in the same manner for all people (Tyler 1990, 1994; Tyler and Huo 2002). In other words, this “invariance thesis” suggests that perceptions of procedural justice should always be equally helpful in producing favorable legitimacy evaluations among all population groups.<sup>2</sup> Indeed, Tyler describes his process-based model of policing as an explanation of legitimacy evaluations that is not conditioned by individual differences—it is a “general” theory (see Tyler 1990,

<sup>1</sup> It is important to note that treating distributive justice and police effectiveness as purely utilitarian concepts is not universally accepted. Beetham (1991), for example, suggests that one cannot view an authority as legitimate if that entity does not effectively accomplish its duties (i.e., effectiveness is enmeshed in legitimacy). As Bottoms and Tankebe (2012) note, “effectiveness and legitimacy are *interdependent* and *organically interactive*...effectiveness is a necessary but not a sufficient condition of legitimacy” (p. 147, emphasis in original). Whether considered utilitarian or otherwise, the concepts provide different explanations of legitimacy evaluations when compared to procedural justice theory.

<sup>2</sup> While procedural justice theory also suggests that perceptions of procedural justice should always have a stronger effect on legitimacy than competing antecedents (as discussed earlier), we view this theoretical proposition as a distinct component of the generality of the framework. In other words, the invariance thesis pertains to the effect of procedural justice on legitimacy always having an equally strong effect across all population groups. The proposition that the procedural justice effect always outpaces the influence of competing antecedents of legitimacy deals with the comprehensiveness of the theory (see Tittle 1995 for a discussion of criteria for judging supposed general theories).

1994, 2004; Tyler and Huo 2002). Based on the supposed generality of the framework, Tyler (2004, p. 95) concludes that “a process-based approach to policing is an ideal way to bridge ethnic and other social divisions in society.” At the same time, Tyler’s (2000) assessment of the literature seems to leave open the possibility for variation in the procedural justice effect—some research reveals that procedural justice has less influence on people who identify with subgroups more so than the larger society. The problem, however, is that limited empirical attention has explicitly tested this invariance thesis.

Examinations of this issue have been led by studies mainly conducted outside the US. For example, while one of the robust findings from the literature is that procedural justice is the key antecedent to legitimacy, cross-cultural variation has been found. Tankebe’s (2009a) examination of a Ghanaian sample demonstrated that police performance evaluations had a larger effect on public cooperation with the police than perceptions of procedural fairness. This study suggests groups of people who have historically strained or alienated relationships with the police may focus more on instrumental concerns than procedural issues. Indeed, Bradford et al. (2014) found that citizens of a socially divided society—South Africa—placed greater emphasis on police effectiveness than procedural justice (see also, Jackson et al. 2014 for an example in Pakistan). Conversely, research from Australia (Hinds and Murphy 2007; Mazerolle et al. 2012, 2013a, b), England and Wales (Jackson et al. 2012a), and Slovenia (Reisig et al. 2012, 2014) reveals that police legitimacy is shaped more by procedural fairness concerns than assessments of police performance. In sum, the degree to which procedural fairness is the primary antecedent of legitimacy across various contexts remains an open empirical question. Furthermore, research rarely goes beyond tests of cultural invariance or theoretical comprehensiveness.

Jackson et al.’ (2012b) recent study is one of the few capable of speaking more broadly to the invariance thesis. Using a sample of English residents, they found that procedural justice had an invariant effect on obligation to obey across age, gender, ethnicity, prior victimization, prior police contact, and neighborhood context. However, procedural fairness was shown to have a stronger effect on trust in the police for respondents with greater fear of crime and higher levels of perceived disorder in their neighborhoods. We aim to build off Jackson and colleagues’ important findings in several ways. First, we extend this line of research into a US context. This is important because of the historical conflict between the police and certain groups of US citizens that may produce different results than those observed in an English context. Second, we examine not only whether the effect of procedural justice on legitimacy is invariant but also simultaneously explore whether other key antecedents of legitimacy have invariant effects. This allows us to empirically scrutinize both the invariance thesis and comprehensiveness of the theory in a single study. Third, we use modeling strategies and tests specifically designed to determine whether apparent differences across groups are statistically meaningful. Finally, research to date has not provided much discussion regarding a theoretically-grounded rationale for expecting the influence of fairness judgments on authority legitimacy evaluations to vary across individual subgroup differences. We provide such a discussion below in an effort to offer a potential competing argument to the procedural justice invariance thesis.

### **Uncertainty Management: A Potential Theoretical Alternative to the Invariance Thesis**

Research on uncertainty management and fairness heuristic theories has observed for nearly two decades that “people appear to make greater use of fairness judgments when they are experiencing uncertainty” (Lind and van den Bos 2002, p. 184; see also Lind et al.

1993; van den Bos 2001; van den Bos et al. 1998). For example, employees who face uncertainty within their organization (e.g., upcoming layoffs, organizational change) but experience fair treatment by supervisors are more likely to have favorable views of the organization and engage in behaviors beneficial to the company (e.g., obey supervisor directives and follow company policies) (Lind and van den Bos 2002; Lind and Tyler 1988; Thau et al. 2007). The lesson from this literature is that uncertainty about what to expect from a given situation causes anxiety and psychological discomfort. To counterbalance such feelings individuals focus on procedural fairness when forming judgments about authorities more so than their counterparts do. This occurs because being treated with respect, having a voice in decision-making, and experiencing unbiased procedures communicates to people that they hold a respected position in the larger context (be it an organization or community) and their well-being and opinions are valued by the authority figures. Fair processes give the impression that authority figures are striving for justice.

We argue that the idea of “uncertainty” extends to the domain of individual orientations toward law enforcement. The concept offers a useful framework for discussing possible variation in the procedural justice effect when particular individual differences and experiences are viewed as potential sources of uncertainty. To be clear, our focus here is to simply provide a potential theoretical alternative to the invariance thesis. Is there theoretical support and empirical evidence to reasonably expect the antecedents of legitimacy to have unequal influence under certain conditions? The purpose of this study is not necessarily to *test* uncertainty management but, rather, provide a theoretical discussion that has different expectations than Tyler’s procedural justice theory. Even Tyler (1990) emphasizes that an ideal examination of the invariance thesis should be balanced with “theoretically derived predictions about variations induced by circumstances” (p. 83). Below we discuss the invariance thesis literature and provide examples of how some conditions could be viewed as sources of “uncertainty” and, therefore, offer the possibility of non-universal procedural justice effects.<sup>3</sup>

### *Procedural Justice Invariance Across Demographic Groups*

The literature relevant to the procedural justice invariance thesis is relatively small but that which does exist focuses on racial and ethnic group variation. Tyler and Huo (2002) revealed that procedural justice is an equally important issue in predicting obligation to obey and trust in the police for whites, African-Americans, and Hispanics (see also, Jackson et al. 2012b). However, other work by Tyler suggests that aspects of procedural

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<sup>3</sup> It is important to note that other arguments exist related to procedural justice invariance. For example, Lind and Tyler’s (1988) group value model suggests that procedural fairness may matter less for those who do not identify with the police. Racial or ethnic minorities, for instance, may be less concerned with procedural justice given their general disconnect with law enforcement. Sargeant et al. (2014) support this argument by showing that procedural fairness was less important than police effectiveness in predicting trust in the police among ethnic minority groups in Australia (see also, Murphy and Cherney 2011). In contrast, Jonathan-Zamir and Weisburd (2013) hypothesized that the uncertainty caused by increased security threats would lead Israeli citizens to base legitimacy evaluations on police effectiveness more so than procedural judgments because effectively preventing a terrorist attack would be more psychologically salient. However, their data did not support this argument. Procedural justice remained the primary antecedent of legitimacy regardless of security threat levels. Thus, despite such frameworks we are left with multiple theoretical possibilities—procedural justice invariance, conditions reflective of uncertainty increasing the relevance of procedural fairness, or out-group status and uncertainty decreasing the relevancy of process-based issues. The literature surrounding uncertainty offers theoretically informed and empirically supported evidence regarding procedural justice invariance across various individual differences and will remain our focus.



justice are more important among African Americans than whites when predicting these outcomes (Tyler 2005; Tyler and Wakslak 2004). In perhaps the most comprehensive study to date, Sunshine and Tyler (2003) compared the influence of procedural justice, distributive justice, and police performance on legitimacy evaluations across racial and ethnic groups. Their analysis showed that the magnitude of the procedural justice effects were larger for racial and ethnic minorities (see also Murphy and Cherney 2011, 2012; Sargeant et al. 2014). Similar distributive justice effect sizes emerged between whites and African-Americans, whereas police performance failed to have a statistically significant effect for either group. Accordingly, racial invariance has been met with mixed evidence to date.

Uncertainty management theory may offer insight as to why variation in the procedural justice effect could be observed across racial subgroups (see also, Braithwaite 2010; Tyler 1990). African Americans as a group may experience more psychological uncertainty with respect to police-citizen interactions. After all, a long line of research reveals that African Americans have less favorable views of the police compared to whites (Brown and Benedict 2002; Decker 1981; Weitzer and Tuch 2006; Wu et al. 2013; Zhao et al. 2014). A history of racial segregation in the US, racial profiling by the police, targeted enforcement in minority communities, and the socialization of cynical views of law enforcement are a few factors believed to contribute to this situation (Anderson 1999; Sampson and Bartusch 1998; Tyler and Wakslak 2004). Accordingly, African Americans have been shown to be more uncertain about whether the police will ignore race when making decisions (Taylor et al. 2014; Tyler and Wakslak 2004; Weitzer and Tuch 2005). To manage this psychological uncertainty, it may be necessary for African Americans to focus more on fairness issues when determining whether to afford legitimacy to the police. Fair procedures may be an important signal that the police are interested in achieving fair outcomes regardless of race. Accordingly, further examination of racial invariance is warranted on both theoretical and empirical grounds.

Likewise, a careful test of the invariance thesis would also consider whether the effect of procedural justice varies across other demographic subgroups such as gender, age, or education level. Research has examined whether such subgroups of people have different overall evaluations of police legitimacy (Gau et al. 2012; Higgins et al. 2009a, b; Kochel et al. 2013; Reisig et al. 2007, 2011; Sunshine and Tyler 2003; Tyler 1994; Wolfe 2011), but few studies have explored whether the effect of procedural justice on legitimacy varies across these factors (Jackson et al. 2012b). This is a worthwhile question because research suggests that the relationship between procedural fairness and organizational outcomes (e.g., commitment, supervisor trust) tends to be stronger for men (Lee and Farh 1999; Lee et al. 2000; Sweeney and McFarlin 1997). Also, younger and well-educated people tend to have less favorable views of the police (see, e.g., Brown and Benedict 2002; Reisig and Correia 1997; Weitzer and Tuch 1999).

### *Procedural Justice Invariance Across Criminal Justice System-Related Experiences*

Tyler's theory is intended to explain perceptions of police legitimacy regardless of the degree of contact one has with officers or the justice system. Nevertheless, research indicates that those with prior personal contact with the police have less positive attitudes towards officers compared to individuals who only have vicarious experience (Brown and Benedict 2002; Cheurprakobkit 2000; Maxfield 1988). The same findings tend to emerge with respect to legitimacy evaluations (for contrary evidence see, Sargeant et al. 2014; Wolfe 2011). Jackson et al. (2012a, b), for example, showed that negative encounters with police were associated with lower ratings of police effectiveness and procedural fairness



(see also, Braga et al. 2014; Jonathan-Zamir and Weisburd 2013; Tyler 1990; Tyler and Wakslak 2004). Relatedly, research shows that victims have less favorable attitudes toward the police than their counterparts (Brown and Benedict 2002; Homant et al. 1984; Thurman and Reisig 1996). Prior victimization generally has not been shown to influence legitimacy evaluations (Jonathan-Zamir and Weisburd 2013; Kochel et al. 2013) but research has not yet explored whether such experience *moderates* the procedural justice–legitimacy relationship. Having contact with a police officer (regardless of its nature) or being the victim of a crime may introduce uncertainty by causing individuals to feel anxious about how the police will handle the situation or whether their problem will be resolved. In turn, these individuals may focus on procedural fairness because such treatment signals that officers honestly strive for *fair* resolutions to problems despite the possibility of having to deliver unfavorable outcomes (e.g., being arrested or not recovering stolen property). In contrast, those without such experiences may focus more on instrumental issues (e.g., effectiveness) because they are only vicariously impacted by police decisions.

### *Procedural Justice Invariance Across Perceived Neighborhood Conditions*

Finally, a large body of research demonstrates that attitudes toward the police are partially shaped by neighborhood context (Dunham and Alpert 1988; Reisig and Giacomazzi 1998; Reisig and Parks 2000; Sampson and Bartusch 1998; Sharp and Johnson 2009; Wu et al. 2009). Much of this literature focuses on contextual neighborhood effects, but a growing line of inquiry reveals that individuals' *perceptions* of their neighborhood are also important in shaping evaluations of the police. For example, individuals who perceive a lack of collective efficacy in their neighborhood have been shown to have less trust in the police (Gau et al. 2012; Nix et al. 2015). Similarly, citizens tend to evaluate the police more negatively when they lack feelings of personal safety in their neighborhood (Braga et al. 2014; Van Craen 2013; Weitzer and Tuch 2006), perceive greater levels of disorder (Cao et al. 1996; Nix et al. 2015; Reisig and Parks 2000), or reside in communities with higher crime rates (or perceive higher levels of crime) (Decker 1981; Reisig and Giacomazzi 1998). Once again, research examining whether perceptions of neighborhood conditions *shape* the manner in which procedural justice is related to legitimacy is nearly nonexistent (see Gau et al. 2012). Jackson et al. (2012b) argued that people may withdraw some of their consent to legal authorities when they perceive lower levels of collective efficacy in their neighborhood but they did not demonstrate empirically that collective efficacy conditioned the effect of procedural justice. Thus, perceived lack of collective efficacy, fear of crime, high levels of disorder, or simply living in an area with high crime may produce psychological uncertainty in residents. Such uncertainty may stem from anxiety about whether one is safe in his/her neighborhood or if the police will do (or care to do) anything about community problems. These individuals' perceptions of the police may be guided more strongly by issues of fairness than their counterparts because they must search for evidence that the police honestly want to help the community despite the negative environmental conditions that may make such efforts difficult.

## **The Present Study**

The present study aims to advance the procedural justice literature in several ways. For one, the evidence relevant to the invariance thesis is scattered throughout numerous studies with sometimes conflicting evidence which makes it difficult to come to a reasonable

conclusion. Second, most invariance examinations largely ignore individual or situational differences beyond race and culture. Third, even when the invariance thesis is implicitly tested, rarely is there a comparison of competing legitimacy frameworks (see Sunshine and Tyler 2003). The present study seeks to bring clarity to this matter and address these gaps. Specifically, we examine whether procedural justice judgments interact with various demographic characteristics, prior experiences, or perceived neighborhood conditions to influence legitimacy evaluations. We also examine whether such factors moderate the influence of competing antecedents. Assessing the invariance thesis and testing the comprehensiveness of the framework (i.e., whether procedural justice is the primary antecedent of legitimacy under all conditions) are important questions because they speak directly to the generality of procedural justice theory.

## Methods and Data

The present study stems from a project funded by the Bureau of Justice Assistance coordinated by the research team in partnership with a mid-sized, urban police agency located in the southeastern US. Four neighborhoods were selected as part of a targeted law enforcement intervention and a community survey served as one component of the evaluation process. Data for the current analyses come from these surveys which involved a random-sample mail questionnaire of 4000 residents. The neighborhoods from which the sample was drawn are located in the largest patrol regions of the city and encompass a wide range of socioeconomic statuses and crime problems. Three of the neighborhoods were selected to closely resemble each other in terms of economic disadvantage and crime rate. An average of 82.8 Part I offenses per 1000 residents occurred in these neighborhoods during the year leading up to the survey. The median household income for the three communities was \$27,700. The fourth neighborhood served as a contrast to the three economically disadvantaged and high-crime communities. In the year prior to the survey, this area had a median household income of about \$51,000 and experienced 45.5 Part I crimes per 1000 citizens.

Questionnaires were administered during the summer of 2013 prior to the start of directed law enforcement operations in the neighborhoods. A random sample of 1,000 residents from each of the four neighborhoods was selected and a modified Dillman survey method was used to encourage participation in the study. Respondents were given the option to complete the survey on a secure website rather than mailing the hard-copy (Dillman et al. 2009). Surveys that arrived at vacant or otherwise inaccessible addresses were removed from the analysis ( $N = 323$ ). This methodology resulted in 1681 completed surveys (95 % of respondents completed the mail version of the questionnaire). The response rate was 46 % which is comparable with other random-sample surveys (Baruch 1999).<sup>4</sup>

The sample ranged in age from 19 to 96 (mean = 57) and was 66 % female and 47 % racial minority (41 % = African-American; 4 % = multiple races; 2 % = other). When compared to the population, the sample is comprised of a slightly larger proportion of female and older respondents but closely approximates the racial composition of the communities. Accordingly, the sample reasonably represents the population from which it was drawn.

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<sup>4</sup> As is common in survey research, a small number of respondents did not provide answers to all items on the questionnaire (less than one-percent of cells were missing in the dataset). Imputation of missing data was completed using the Stata 13 *hotdeck* suite (Allison 2001; Andridge and Little 2010; Fuller and Kim 2005; Gmel 2001).

## Dependent Variables

We conceptualize police legitimacy as multifaceted and embodying two components—obligation to obey and trust. Obligation to obey was captured by asking respondents to indicate how much they agree or disagree (1 = *strongly disagree* to 4 = *strongly agree*) with two statements: “You should do what the police tell you even if you disagree” and “You should accept police decisions even if you think they are wrong” (Gau et al. 2012; Kochel et al. 2013; Reisig et al. 2007; Tankebe 2013). Consistent with our earlier discussion, we use this measure of legitimacy because it is one of the most common in the literature and reflects Tyler’s (1990) original theoretical argument concerning the concept.<sup>5</sup> As Sunshine and Tyler (2003, p. 514) suggest, the feeling that the police are entitled to be obeyed reflects legitimacy because it represents individuals’ “normative, moral, or ethical feeling of responsibility to defer.” The second component—*trust in the police*—was captured by asking respondents to indicate how much they agree or disagree (1 = *strongly disagree* to 4 = *strongly agree*) that “The police can be trusted to make decisions that are right for my community” (Jackson et al. 2012a, b; Nix et al. 2015; Sargeant et al. 2014; Tyler 2000, 2005; Tyler and Huo 2002; Wu et al. 2009). This measure captures institutional trust in the police by assessing the degree to which the public views officers as “competent authorities who exercise their institutional responsibilities on behalf of all citizens” (Tyler 2005, p. 324).<sup>6</sup> People are said to view the police as legitimate if they “trust them to act in ways that benefit the people over whom they exercise authority” (Tyler and Jackson 2014, p. 81). Research reveals that obligation to obey and trust tend to load on separate factors and procedural justice items (discussed below) are sometimes interrelated with legitimacy measures. Principal component analysis (PCA) revealed that the items loaded onto their respective components (obligation loadings >.694; trust loading = .873; procedural justice loadings >.852). Thus, the data provide evidence that procedural justice is distinct from the legitimacy measures and obligation to obey and trust should be treated as separate concepts. We operationalized *obligation to obey* (skewness = −.250, kurtosis = 3.197) as a two-item additive index ( $\alpha = .675$ ) and *trust in the police* (skewness = −.824, kurtosis = 4.452) as a single-item indicator with higher scores on both representing greater evaluations of legitimacy. Table 1 presents descriptive statistics for all variables used in the analyses.

## Independent Variables

### *Procedural Justice*

Items used to capture respondents’ evaluations of procedural justice were adopted from the existing process-based literature (Gau et al. 2012; Reisig et al. 2007; Tankebe 2013). Respondents were asked to indicate the extent to which they agreed or disagreed that police

<sup>5</sup> As discussed earlier, there is debate in the literature concerning whether obligation to obey captures “free consent” or if it simply taps into dull compulsion (Jackson et al. 2012a, b; Johnson et al. 2014; Tankebe 2013; Tyler and Jackson 2014). Our goal is to provide empirical evidence concerning the invariance thesis that can be situated within the largest portion of prior research. Our hope is that the current analyses will help inform prior legitimacy work and serve as a foundation for future research that is capable of measuring other conceptual definitions of legitimacy.

<sup>6</sup> Other types of trust have been explored by Tyler (1990, 2005) and others both theoretically and empirically (see, e.g., Nix et al. 2015; Sargeant et al. 2014). For example, motive-based trust “involves inferences about the motives and intentions of the police” (Tyler 2005, p. 325).

**Table 1** Descriptive statistics

	Mean	SD	Min	Max
Obligation to obey	4.967	1.351	2	8
Trust	2.854	.650	1	4
Procedural justice	12.554	2.329	4	16
Distributive justice	6.058	1.482	2	8
Police effectiveness	5.512	1.287	2	8
Male (1 = yes, 0 = no)	.339	–	0	1
Racial minority (1 = yes, 0 = no)	.471	–	0	1
Age	57.656	16.403	19	96
Education	3.241	.907	1	4
Police contact (1 = yes, 0 = no)	.309	–	0	1
Victim (1 = yes, 0 = no)	.225	–	0	1
Low collective efficacy	21.629	5.640	10	40
Fear of crime	6.749	1.869	3	12
Disorder	3.692	3.909	0	18
Low crime neighborhood (1 = yes, 0 = no)	.305	–	0	1

Values represent original coding strategies. All variables except the police legitimacy measures and binary indicators are mean centered prior to multivariate analysis

in their neighborhoods “treat citizens with respect,” “take the time to listen to people,” “treat people fairly,” and “explain their decisions to the people they deal with” (1 = *strongly disagree* to 4 = *strongly agree*). The items demonstrated strong internal consistency ( $\alpha = .936$ ). Accordingly, *procedural justice* was operationalized as a summed scale with higher scores indicating more agreement that local police treat citizens in a procedurally fair manner.

### *Distributive Justice*

Consistent with previous research, we measure distributive justice perceptions by asking respondents if police in their neighborhood “give minorities less help because of their race” and “provide better services to wealthy citizens” with response categories anchored from 1 (*strongly disagree*) to 4 (*strongly agree*) (Tyler and Wakslak 2004). The items were strongly correlated ( $r = .727$ ) and had a high degree of scale reliability ( $\alpha = .837$ ). Both items were reversed coded and summed to create a two-item *distributive justice* scale with higher scores representing perceptions that the police distribute services equally to the public.

### *Police Effectiveness*

Similar to previous research, we asked respondents two questions to capture their attitudes regarding police effectiveness (Sunshine and Tyler 2003; Tyler 2005): “The police are doing a good job in my neighborhood” and “There are enough police in my neighborhood” (1 = *strongly disagree* to 4 = *strongly agree*). The items were combined into an additive *police effectiveness* index with higher scores representing stronger agreement that local police are effectively performing their duties ( $r = .535$ ;  $\alpha = .689$ ).

### *Demographic Variables*

We included several variables to determine the extent to which the effects of procedural justice, distributive fairness, or police effectiveness on legitimacy are moderated by demographic categories. Respondent gender (1 = *male*) and race (1 = *racial minority*)<sup>7</sup> were dummy coded. Respondent *age* was measured in years and *education* was captured using four ordered categories (1 = *less than a high school diploma*, 2 = *high school diploma or GED*, 3 = *some college*, and 4 = *bachelor's degree or higher*).

### *Criminal Justice-Related Experiences*

We capture two criminal justice-related experiences that may influence the effect of procedural fairness on legitimacy. First, *police contact* (1 = *yes*) was measured by asking respondents “During the past 6 months, have you had any contact with a Columbia Police Department officer?” About 31 % of respondents had contact with an officer in the 6 months prior to the survey. Prior victimization experiences were captured by asking respondents to indicate how many times in the 6 months leading up to the survey they had their vehicle stolen, vehicle broken into, property vandalized, home broken into, or had been physically assaulted (without weapon), physically assaulted or threatened with a weapon, or robbed. As expected, victimization was relatively rare leading us to create a dummy variable—*victim*—coded 1 if the respondent had experienced at least one form of victimization. Nearly one-quarter of the sample self-reported at least one victimization experience.

### *Perceived Neighborhood Context*

Four measures of perceived neighborhood context were included in this study. First, respondents' perceptions regarding the amount of collective efficacy in their neighborhood were measured with two sets of survey questions (Sampson et al. 1997). Informal social control efforts were captured by asking participants how likely (1 = *very unlikely* to 4 = *very likely*) it would be that their neighbors could be counted on to intervene if (1) teenagers were skipping school and hanging out on a street corner, (2) teenagers were spray-painting graffiti on a local building, (3) teenagers were showing disrespect to an adult, (4) a fight broke out near your home, and (5) the fire station close to your home was threatened by budget cuts (all items reverse coded). Perceptions of social cohesion and trust were assessed by asking respondents how strongly they agreed (1 = *strongly disagree* to 4 = *strongly agree*) that “people around here are willing to help their neighbors” (reverse coded), “this is a close-knit neighborhood” (reverse coded), “people in this neighborhood can be trusted” (reverse coded), “people in this neighborhood generally *do not* get along with each other” and “people in this neighborhood *do not* share the same values.” PCA revealed that the items loaded onto a single component (loadings >.461). A 10-item additive *low collective efficacy* scale was created and coded so higher scores indicate a perceived *lack* of collective efficacy ( $\alpha = .863$ ).

<sup>7</sup> A vast majority of respondents classified as a racial minority were African American (87 % of minorities; 41 % of the total sample). Accordingly, the remaining racial or ethnic minorities were combined with African Americans in the analyses. All models reported below were reestimated after excluding all minorities except African Americans from the analyses and no substantive differences in the results emerged. While it would be interesting to explore ethnic group differences, only 14 respondents self-reported being Hispanic which is too small of a sample for meaningful analyses.

Second, three questions anchored from 1 (*strongly disagree*) to 4 (*strongly agree*) assessed respondents' fear of crime: "I generally feel safe walking alone at night in my neighborhood" (reverse coded), "I generally feel safe and secure in my home" (reverse coded), and "In the past month, fear of crime has prevented me from doing things I would like to do" (see, Gau and Pratt 2008). PCA demonstrated a single component (loadings  $>.645$ ). The items were summed to form a three-item *fear of crime* scale with higher scores indicating greater fear for personal safety ( $\alpha = .636$ ).

Third, respondents were asked to indicate how much of a problem (1 = *not a problem*, 2 = *somewhat of a problem*, and 3 = *serious problem*) a series of nine social and physical incivilities are in their neighborhood (i.e., garbage, excessive noise, vandalism, drunk drivers, traffic problems, public drunkenness, drug use and sales, loitering, and youth gangs) (Gau and Pratt 2008). The items were shown to coalesce onto a single component using PCA (loadings  $>.604$ ). *Disorder* is an additive scale with higher scores indicating more perceived incivilities in respondents' neighborhoods ( $\alpha = .858$ ).

The final neighborhood context variable assess whether differences in relative neighborhood crime rate affect the degree to which the key predictors influence legitimacy. Recall that one comparison neighborhood with a low crime rate was selected as part of the directed policing intervention project and was included in this sample. The dummy variable *low crime neighborhood* is coded 1 if the respondent resides in this community (31 % of sample). The three neighborhoods that have an 82 % greater crime rate serve as the reference category. The [Appendix](#) provides descriptive statistics for the other neighborhood context variables by low and high crime neighborhoods.

## Analytic Strategy

The purpose of the present study is twofold: (1) assess the generality of procedural justice theory by testing the extent to which it has an invariant effect on legitimacy evaluations across individual and situational differences and (2) examine the comprehensiveness of the framework by determining whether competing legitimacy frameworks are conditioned by the same factors. To do so, our analysis proceeds in a series of steps. To begin, we examine the independent and simultaneous effects of procedural justice, distributive justice, and police effectiveness (i.e., "the key antecedents") on respondents' perceptions of police legitimacy by estimating several ordinary least squares (OLS) regression equations (see Table 2). Separate models are estimated for obligation to obey and trust to determine whether there are differences across each measure of legitimacy. Using stepwise OLS models in this stage of the analysis is important because it allows us to preliminarily assess the comprehensiveness of procedural justice theory (i.e., procedural justice should have a stronger influence on legitimacy than competing variables).

The next step of the analysis tests the invariant effect of the key antecedents on legitimacy (i.e., separately for obligation to obey and trust) and is separated into three analytic sections (i.e., demographics, previous criminal justice-related experience, and perceived neighborhood context). Within the first section, we test the effects of the key predictor variables on legitimacy evaluations across various demographic categories (see Table 3). To do so, we create mean-centered interaction terms between each of the key antecedents and gender, race, age, and education level (Aiken and West 1991; Long and Freese 2006). Statistically significant interaction effects will suggest that the influence of the key antecedents on obligation to obey or trust is moderated by the respective



demographic category. The *margins* command available in Stata 13 is used to explore any statistically significant interaction effects. This allows us to more fully understand the nature of the interaction and provide a graphical depiction of the relationship. In a similar fashion, the second section interacts the criminal justice-related past experience measures with the key antecedents (see Table 4). The final section examines whether the perceived neighborhood context variables moderate the influence of the key antecedents on the legitimacy outcomes (see Table 5). In sum, Tables 3, 4 and 5 provide the opportunity to test the invariance thesis and explore the overall comprehensiveness of the theory in greater detail.<sup>8</sup>

## Results

### The Key Antecedents of Police Legitimacy

We begin our analysis in Table 2 which presents the results of six OLS models that estimate the independent and simultaneous effects of procedural justice and the two competing variables on the legitimacy outcomes. In Model 1, the legitimacy measures are regressed onto the procedural justice scale and 10 demographic, prior contact/experience, and perceived neighborhood context variables. As expected, procedural justice is significantly and positively associated with both obligation to obey the police ( $b = .111, p < .01$ ) and trust in law enforcement ( $b = .106, p < .01$ ). The standardized partial regression coefficients ( $\beta$ ) demonstrate that perceptions of procedural justice are associated with people's evaluations of police legitimacy to a much greater degree than demographic differences, prior contact/experience, or neighborhood perceptions.

Model 2 tests the influence of distributive justice and police effectiveness perceptions on the police legitimacy outcomes. The purpose of these equations is to assess the relative influence of the competing antecedents on legitimacy without accounting for procedural fairness perceptions. Consistent with previous research, the results reveal that individuals who are more satisfied with police performance feel more obligated to obey police directives ( $b = .190, p < .01$ ) and have more trust in officers ( $b = .185, p < .01$ ). Distributive justice did not have a statistically significant effect on obligation to obey but was associated with trust in the police ( $b = .035, p < .01$ ). Equal distribution of services seems to increase the public's trust in law enforcement but does not influence peoples' obligation to obey the police.<sup>9</sup>

The final model in Table 2 (Model 3) examines the simultaneous effects of procedural justice and the competing variables on the legitimacy outcomes and several important findings emerge. First, the results demonstrate that perceptions of procedural justice account for a sizable portion of the overall explained variation in obligation to obey

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<sup>8</sup> Diagnostic tests demonstrated that no harmful levels of collinearity are present in the multivariate models presented below. All bivariate correlations fell below an absolute value of 0.70 which is typically used as a threshold indicative of harmful collinearity (Tabachnick and Fidell 2007). Additionally, all variance inflation factors fell below the 4.0 threshold (Tabachnick and Fidell 2007) and all condition indices below the threshold of 30 (Belsley et al. 1980; Mason and Perreault 1991).

<sup>9</sup> We also reestimated Model 2 (Table 2) by including distributive justice and police performance separately. Distributive justice remained insignificant in the obligation to obey equation and significant in the trust equation after excluding police performance from the models. Likewise, the police performance effect remained unchanged in terms of direction and significance when distributive justice was excluded from both the obligation to obey and trust models.

**Table 2** The effect of procedural justice on evaluations of police legitimacy

	Model 1 <sup>a</sup>		Model 2 <sup>a</sup>		Model 3 <sup>a</sup>	
	Obligation <i>b</i> (se) [β]	Trust <i>b</i> (se) [β]	Obligation <i>b</i> (se) [β]	Trust <i>b</i> (se) [β]	Obligation <i>b</i> (se) [β]	Trust <i>b</i> (se) [β]
Procedural justice	.111 (.017)** [.196]	.106 (.009)** [.379]	–	–	.093 (.019)** [.160]	.079 (.009)** [.284]
Distributive justice	–	–	–.001 (.027) [–.001]	.035 (.012)** [.080]	–.023 (.027) [–.025]	.016 (.012) [.036]
Police effectiveness	–	–	.190 (.032)** [.181]	.185 (.016)** [.366]	.126 (.034)** [.120]	.131 (.016)** [.259]
Male	.150 (.068)* [.052]	–.032 (.032) [–.023]	.123 (.068) <sup>†</sup> [.043]	–.059 (.031) <sup>†</sup> [–.043]	.147 (.067)* [.051]	–.039 (.030) [–.028]
Racial minority	–.137 (.080) [–.051]	–.060 (.036) <sup>†</sup> [–.046]	–.158 (.082) <sup>†</sup> [–.059]	–.057 (.037) [–.044]	–.142 (.080) <sup>†</sup> [–.052]	–.043 (.035) [–.033]
Age	–.001 (.002) [–.017]	–.002 <sup>b</sup> (.001) [–.006]	–.001 (.002) [–.016]	–.003 <sup>b</sup> (.001) [–.008]	–.002 (.002) [–.023]	–.001 (.001) [–.020]
Education	–.043 (.042) [–.029]	–.026 (.019) [–.036]	–.017 (.042) [–.011]	–.004 (.019) [–.005]	–.034 (.042) [–.023]	–.018 (.019) [–.025]
Police contact	–.086 (.075) [–.029]	–.032 (.034) [–.023]	–.064 (.076) [–.022]	–.016 (.035) [–.011]	–.066 (.075) [–.023]	–.018 (.033) [–.012]
Victim	.114 (.083) [.035]	–.018 (.037) [–.012]	.103 (.083) [.032]	–.024 (.038) [–.015]	.116 (.083) [.036]	–.012 (.036) [–.008]
Low collective efficacy	–.004 (.006) [–.016]	–.009 (.003)** [–.080]	–.006 (.007) [–.024]	–.010 (.003)** [–.083]	–.003 (.006) [–.011]	–.007 (.003)* [–.061]
Fear of crime	–.002 <sup>b</sup> (.021) [–.002]	–.019 (.010) <sup>†</sup> [–.053]	.014 (.022) [.020]	–.004 (.010) [–.010]	.017 (.021) [.024]	–.001 (.009) [–.003]
Disorder	–.005 (.010) [–.015]	–.010 (.005)* [–.059]	.003 (.010) [.007]	–.001 (.004) [–.005]	.001 (.001) [.004]	–.002 (.005) [–.012]
Low crime neighborhood	.047 (.085) [.016]	–.082 (.037)* [–.058]	.005 (.086) [.002]	–.114 (.038)** [.081]	.032 (.085) [.011]	–.091 (.035)** [–.064]
Intercept	4.957 (.070)**	2.932 (.030)**	4.996 (.072)**	2.946 (.030)**	4.969 (.070)**	2.924 (.029)**
<i>F</i> -test	6.05**	23.90**	4.77**	20.79**	6.62**	29.63**
<i>R</i> <sup>2</sup>	.049	.192	.040	.177	.060	.240

Entries are unstandardized partial regression coefficients (*b*), robust standard errors in parentheses, and standardized partial regression coefficients in brackets [β]

\*\* *p* < .01; \* *p* < .05; <sup>†</sup> *p* < .10 (two-tailed test)

<sup>a</sup> Ordinary least squares regression equations

<sup>b</sup> Coefficient multiplied by 10

(approximately 33 %) (Model 2  $R^2 = .040$ ; Model 3  $R^2 = .060$ ) and trust in the police (approximately 26 %) (Model 2  $R^2 = .177$ ; Model 3  $R^2 = .240$ ). It is also important to note that the overall explained variation in obligation to obey is much smaller than the trust model (see, e.g., Reisig et al. 2007). Second, procedural justice has a significant effect on obligation ( $b = .093$ ,  $p < .01$ ) and trust ( $b = .079$ ,  $p < .01$ ) after accounting for the competing variables. Similarly, attitudes regarding police effectiveness remain a significant predictor of individuals' obligation to obey the police ( $b = .126$ ,  $p < .01$ ) and trust in law enforcement ( $b = .131$ ,  $p < .01$ ) even after accounting for perceptions of procedural fairness. A comparison of the standardized partial regression coefficients ( $\beta$ ), however, demonstrates that the procedural justice effect on obligation to obey ( $\beta = .160$ ) is about 25 % greater than the police effectiveness effect ( $\beta = .120$ ). While not as pronounced, procedural justice also has a larger standardized effect on trust in the police ( $\beta = .284$ ) than the police effectiveness scale ( $\beta = .259$ ). The equations also mirror previous research by showing that distributive justice does not have an effect on the legitimacy outcomes after accounting for procedural justice and police effectiveness (Sunshine and Tyler 2003).

The only other variable that reached statistical significance in the obligation equation was “male” ( $b = .147$ ,  $p < .05$ ) (see Model 3). Compared to their female counterparts, males in this sample felt a greater obligation to obey the police (Kochel et al. 2013; Reisig et al. 2011). The lack of other demographic effects on legitimacy is consistent with prior research (Sunshine and Tyler 2003; Tyler 1994, 2000). Within the trust equation, however, the low collective efficacy ( $b = -.007$ ,  $p < .01$ ) and low crime neighborhood ( $b = -.091$ ,  $p < .05$ ) measures were negatively associated with police trustworthiness. The low collective efficacy effect seems to indicate that mistrust in the police may be structuralized (see Kirk and Matsuda 2011; Kirk and Papachristos 2011). However, respondents in the lower crime neighborhood tended to have less trust in the police than those in higher crime communities. Although this result appears counterintuitive, some research has shown that wealthy and well-educated individuals (e.g., those more likely to live in low crime neighborhoods) tend to “view the police less favorably than those with lower incomes and less education” (Brown and Benedict 2002, p. 551). It seems that individuals in the lower crime neighborhood may face more uncertainty about whether the police can be trusted to do what is right for the community than those who lived in poor, crime-ridden areas.<sup>10</sup>

In sum, the results support Tyler's theoretical arguments and prior empirical evidence that procedural fairness has the strongest effect on legitimacy regardless if operationalized as obligation to obey or trust in the police. Thus, while perceptions of police effectiveness are clearly important in understanding evaluations of police legitimacy, procedural justice judgments appear to be the primary antecedent within this sample (Kochel 2013; Sunshine and Tyler 2003; Tyler 2005; Tyler and Wakslak 2004). However, an important qualification of this result will be reported in the analyses below. With this baseline established, we now move to the assessment of whether the key predictors have invariant effects on legitimacy evaluations.

<sup>10</sup> As an anonymous reviewer noted, the question that may arise from this set of analyses is why are low collective efficacy and low crime neighborhood significant in the trust equations but not in the obligation to obey models? For one, obligation to obey may tap into “dull compulsion” rather than moral alignment (or other conceptualizations of legitimacy discussed earlier). Or, it may be that the police are regarded as justified authority (people feel obligated to obey them) in high crime neighborhoods but are still not trusted.

## Do the Key Theoretical Variables Have Invariant Effects on Police Legitimacy?

Table 3 presents the results of whether individual demographic differences moderate the relationship between the key antecedents and the legitimacy outcomes. A separate OLS regression equation was estimated for each of the four demographic variables and two legitimacy outcomes (displayed as the eight columns in Table 3). For each equation, a mean-centered multiplicative interaction term between each of the key antecedents and the demographic variable under consideration was created (dummy variables were not mean-centered). For example, the first column (“Male”) and the first row (“Procedural justice  $\times$  [Variable]”) presents the unstandardized and standardized partial regression coefficients and robust standard error for the interaction effect between male and procedural justice on obligation to obey. Thus, each model estimates the effects of three interactions while controlling for the other demographic characteristics, prior experience, and perceived neighborhood effects (for clarity, only the interaction effects and simple effects for the interacted variables are presented in the table; full results are available upon request).

The analyses show that none of the interaction effects were statistically significant. This provides evidence that among this sample procedural justice, distributive justice, and police effectiveness have invariant effects on the police legitimacy outcomes across each of the demographic categories. In other words, the key antecedents are associated with obligation to obey and trust in the police to a similar degree regardless of gender, race, age, or education level. This lends support to Tyler’s (1990, 1994, 2004) invariance argument.

Table 4 presents tests of whether individuals’ previous criminal justice-related experiences condition the influence of the key antecedents on legitimacy. The interaction effects were created in the same manner as discussed above. One important finding emerges from these models. The *procedural justice*  $\times$  *victim* interaction effect is significantly and positively associated with trust in the police ( $b = .040$ ,  $p < .05$ ). Thus, the strength of the procedural justice effect on trust (i.e., the regression slope) depends on whether an individual has been the victim of a crime in the 6 months prior to data collection. We estimated the effect of procedural fairness on trust along each value of the moderator variable (i.e., *victim*) using the *margins* command in Stata. Figure 1 shows that the procedural justice effect on trust in law enforcement is stronger for crime victims than non-victims. In other words, procedural fairness influences trust in the police to a greater degree for people who have recently been victimized.

Beyond this relationship, procedural justice and police effectiveness appear to shape obligation to obey and trust in the police to a similar degree regardless of whether a respondent had personal contact with a local officer or was the victim of a crime in the previous 6 months. It is also important to note that the simple effect standardized partial regression coefficients ( $\beta$ ) suggest that police effectiveness is more strongly related to obligation and trust than procedural justice for the average respondent who does not have recent police contact or victimization (i.e., in all models except obligation with victim interaction terms). Thus, for respondents with limited criminal justice system-related experience legitimacy evaluations seem to be rooted more in instrumental concerns of

**Table 3** The effect of procedural justice on legitimacy across demographic groups

Interaction variable	[Male] <sup>a</sup>		[Racial minority] <sup>a</sup>		[Age] <sup>a</sup>		[Education] <sup>a</sup>	
	Obligation <i>b</i> (se) [β]	Trust <i>b</i> (se) [β]	Obligation <i>b</i> (se) [β]	Trust <i>b</i> (se) [β]	Obligation <i>b</i> (se) [β]	Trust <i>b</i> (se) [β]	Obligation <i>b</i> (se) [β]	Trust <i>b</i> (se) [β]
Procedural justice × [Variable] <sup>c</sup>	.002 (.038) [.002]	-.009 (.018) [-.018]	-.046 (.038) [-.053]	-.022 (.018) [-.052]	-.001 (.001) [-.012]	-.001 (.001) [-.043]	.030 (.021) [.047]	-.010 (.011) [-.032]
Distributive justice × [Variable] <sup>c</sup>	-.043 (.054) [-.027]	-.034 (.024) [-.046]	.068 (.053) [.054]	.024 (.024) [.041]	-.002 (.002) [-.032]	.002 <sup>b</sup> (.001) [.007]	.045 (.027) <sup>†</sup> [.047]	-.001 <sup>b</sup> (.013) [-.003 <sup>b</sup> ]
Police effectiveness × [Variable] <sup>c</sup>	.071 (.066) [.038]	.044 (.033) [.049]	-.036 (.063) [-.025]	-.024 (.030) [-.034]	.003 (.002) [.041]	.001 (.001) [.028]	-.028 (.035) [-.024]	.003 (.017) [.005]
Procedural justice	.091 (.023)** [.157]	.081 (.011)** [.292]	.112 (.023)** [.193]	.088 (.011)** [.317]	.092 (.019)** [.159]	.080 (.009)** [.286]	.090 (.019)** [.155]	.080 (.009)** [.285]
Distributive justice	-.008 (.032) [-.009]	.027 (.015) <sup>†</sup> [.062]	-.056 (.038) [-.062]	.004 (.015) [.010]	-.022 (.027) [-.024]	.015 (.012) [.034]	-.019 (.027) [-.021]	.016 (.012) [.037]
Police effectiveness	.105 (.041)** [.100]	.117 (.018)** [.232]	.147 (.044)** [.140]	.141 (.021)** [.285]	.127 (.034)** [.121]	.130 (.016)** [.258]	.128 (.034)** [.122]	.130 (.016)** [.258]
Male	.147 (.067)* [.052]	-.039 (.030) [-.028]	.157 (.067)* [.055]	-.033 (.030) [-.024]	.143 (.067)* [.050]	-.040 (.031) [-.029]	.144 (.067)* [.051]	-.040 (.030) [-.029]
Racial minority	-.146 (.080) <sup>†</sup> [-.02 (002)]	-.044 (.035) [-.001 (001)]	-.145 (.080) <sup>†</sup> [-.002 (002)]	-.045 (.035) [-.001 (001)]	-.132 (.080) <sup>†</sup> [-.002 (002)]	-.040 (.035) [-.001 (001)]	-.137 (.080) <sup>†</sup> [-.002 (002)]	-.042 (.035) [-.001 (001)]
Age	-.033 (.042) 5.64**	-.017 (.019) 24.50**	-.030 (.042) 5.91**	-.017 (.019) 27.47**	-.031 (.042) 5.63**	-.017 (.019) 24.86**	-.022 (.043) 6.05**	-.019 (.019) 24.36**
<i>F</i> test	.061	.242	.063	.243	.062	.242	.065	.241
<i>R</i> <sup>2</sup>								

All models control for police contact, victim, low collective efficacy, fear of crime, disorder, and low crime neighborhood. Entries are unstandardized partial regression coefficients (*b*), robust standard errors in parentheses, and standardized partial regression coefficients in brackets [β]

\*\* *p* < .01; \* *p* < .05; † *p* < .10 (two-tailed test)

<sup>a</sup> Ordinary least squares regression equation

<sup>b</sup> Coefficient multiplied by 10

<sup>c</sup> Represents the proposed moderator variable (i.e., male, racial minority, age, or education) for the respective model

**Table 4** The effect of procedural justice on legitimacy across criminal justice-related experiences

Interaction variable	[Police contact] <sup>a</sup>		[Victim] <sup>a</sup>	
	Obligation <i>b</i> (se) [β]	Trust <i>b</i> (se) [β]	Obligation <i>b</i> (se) [β]	Trust <i>b</i> (se) [β]
Procedural justice × [Variable] <sup>b</sup>	.033 (.038) [.036]	.029 (.018) [.065]	−.063 (.042) [−.058]	.040 (.021)* [.075]
Distributive justice × [Variable] <sup>b</sup>	−.075 (.052) [−.047]	−.004 (.026) [−.005]	−.004 (.058) [−.002]	−.032 (.026) [−.038]
Police effectiveness × [Variable] <sup>b</sup>	−.114 (.065) [−.064]	−.033 (.033) [−.038]	−.097 (.069) [−.048]	.002 (.036) [.002]
Procedural justice	.083 (.024)** [.143]	.069 (.012)** [.246]	.110 (.021)** [.190]	.068 (.011)** [.245]
Distributive justice	−.001 (.033) [−.001]	.016 (.014) [.037]	−.020 (.031) [−.022]	.024 (.014) <sup>†</sup> [.054]
Police effectiveness	.164 (.043)** [.157]	.142 (.019)** [.281]	.151 (.039)** [.143]	.132 (.018)** [.261]
Police contact	−.071 (.074)	−.020 (.034)	−.078 (.075)	−.012 (.034)
Victim	.110 (.084)	−.011 (.037)	.083 (.083)	−.007 (.036)
<i>F</i> -test	5.80**	24.72**	6.02**	25.81**
<i>R</i> <sup>2</sup>	.064	.242	.066	.244

All models control for male, racial minority, age, education, low collective efficacy, fear of crime, disorder, and low crime neighborhood. Entries are unstandardized partial regression coefficients (*b*), robust standard errors in parentheses, and standardized partial regression coefficients in brackets [β]

\*\*  $p < .01$ ; \*  $p < .05$ ; <sup>†</sup>  $p < .10$  (two-tailed test)

<sup>a</sup> Ordinary least squares regression equation

<sup>b</sup> Represents the proposed moderator variable (i.e., police contact or victim) for the respective model

police effectiveness than process-based issues of fair treatment. The implications of this finding will be discussed in greater detail later.<sup>11</sup>

The final stage of the analysis explores whether perceived neighborhood conditions influence the magnitude of the procedural justice and competing variable effects on police legitimacy (see Table 5). Our data reveal no neighborhood moderating effects on procedural justice or police effectiveness. The degree to which respondents view a lack of collective efficacy in their community, fear criminal victimization, or perceive disorder

<sup>11</sup> To test the robustness of these results presented in Table 4 we created new operationalizations of “police contact” and “victimization.” Supplemental analyses (not reported in text) revealed that the influence of procedural justice and police effectiveness on the legitimacy measures were the same magnitude for individuals who had personal contact with the police that was *initiated* by the officer in comparison to those with no contact or only self-initiated contact. It is worth reiterating that 31 % of the sample reported prior contact with the police. Future research may benefit from exploring the invariance thesis among people with more contact by using an offender-based sample. Additionally, we reestimated the prior victim interaction effects using a victimization scale (i.e., the natural log of the count of victimizations in the previous 6 months) rather than the dummy variable. Importantly, the influence of procedural justice on trust in the police is no longer moderated by prior victimization when operationalized in this manner. Thus, the invariance of the key theoretical variables do not appear to be sensitive to how we operationalize prior police contact but the conditioning influence of prior victimization appears to manifest only when comparing those respondents who have been a victim to those who have not been (i.e., multiple victimizations does not have a discernable moderation effect on procedural justice).



**Table 5** The effect of procedural justice on legitimacy across perceived neighborhood conditions

Interaction variable	[Low collective efficacy] <sup>a</sup>		[Fear of crime] <sup>b</sup>		[Disorder] <sup>a</sup>		[Low crime neighborhood] <sup>a</sup>	
	Obligation <i>b</i> (se) [β]	Trust <i>b</i> (se) [β]	Obligation <i>b</i> (se) [β]	Trust <i>b</i> (se) [β]	Obligation <i>b</i> (se) [β]	Trust <i>b</i> (se) [β]	Obligation <i>b</i> (se) [β]	Trust <i>b</i> (se) [β]
Procedural justice × [Variable] <sup>c</sup>	-.001 <sup>b</sup> (.003) [-.001]	.001 (.001) [.017]	-.011 (.009) [-.040]	-.001 (.005) [-.006]	.005 <sup>b</sup> (.004) [.004]	.003 <sup>b</sup> (.002) [.004]	.012 (.039) [.012]	.009 (.017) [.018]
Distributive justice × [Variable] <sup>c</sup>	.007 (.004) [.045]	.002 (.002) [.020]	.019 (.014) [.042]	.012 (.006)* [.054]	.008 (.006) [.038]	-.006 (.003)* [.060]	-.007 (.058) [-.004]	-.004 (.025) [-.004]
Police effectiveness × [Variable] <sup>c</sup>	-.002 <sup>b</sup> (.005) [-.001]	.004 (.002) <sup>†</sup> [.057]	.018 (.015) [.035]	.001 (.007) [.002]	-.004 (.007) [-.016]	.004 (.004) [.040]	.036 (.070) [.018]	-.003 (.031) [-.003]
Procedural justice	.092 (.019)** [.159]	.079 (.009)** [.283]	.093 (.019)** [.160]	.079 (.009)** [.282]	.091 (.019)** [.157]	.078 (.009)** [.281]	.088 (.023)** [.152]	.076 (.012)** [.274]
Distributive justice	-.025 (.027) [-.027]	.015 (.012) [.035]	-.022 (.026) [-.024]	.016 (.012) [.035]	-.027 (.027) [-.029]	.013 (.012) [.029]	-.020 (.032) [-.022]	.017 (.015) [.039]
Police effectiveness	.126 (.034)** [.120]	.130 (.016)** [.257]	.126 (.034)** [.120]	.131 (.016)** [.259]	.130 (.035)** [.124]	.128 (.016)** [.253]	.117 (.040)** [.111]	.131 (.019)** [.260]
Low collective efficacy	-.003 (.007) [-.014]	-.007 (.009) [-.062]	-.003 (.007) [-.011]	-.007 (.003)* [-.062]	-.003 (.007) [-.014]	-.007 (.003)* [-.062]	-.003 (.007) [-.012]	-.007 (.003)* [-.061]
Fear of crime	.018 (.021) [.042]	-.001 (.010) [.035]	.018 (.021) [.042]	-.002 (.010) [.035]	.017 (.022) [.042]	-.002 (.009) [.035]	.019 (.022) [.042]	-.001 (.009) [.035]
Disorder	.002 (.010) [.042]	-.001 (.005) [.035]	.003 (.010) [.042]	-.001 (.005) [.035]	.003 (.010) [.042]	.002 (.005) [.035]	.001 (.010) [.042]	-.002 (.005) [.035]
Low crime neighborhood	.042 (.085) [.014]	-.088 (.035)* [-.062]	.036 (.085) [.012]	-.087 (.035)* [-.062]	.035 (.084) [.012]	-.086 (.035)* [-.061]	.025 (.085) [.009]	-.091 (.037)* [-.064]
<i>F</i> test	5.64**	24.50**	5.57**	24.43**	5.41**	25.22**	5.44**	24.99**
<i>R</i> <sup>2</sup>	.062	.245	.063	.243	.062	.246	.060	.240

All models control for male, racial minority, age, education, police contact, and victim. Entries are unstandardized partial regression coefficients (*b*), robust standard errors in parentheses, and standardized partial regression coefficients in brackets [β]

\*\* *p* < .01; \* *p* < .05; † *p* < .10 (two-tailed test)

<sup>a</sup> Ordinary least squares regression equation

<sup>b</sup> Coefficient multiplied by 10

<sup>c</sup> Represents the proposed moderator variable (i.e., low collective efficacy, fear of crime, disorder, or low crime neighborhood) for the respective model

does not impact the degree to which procedural fairness or police effectiveness are associated with obligation to obey or trust. Further, whether a person lives in a neighborhood with low or high crime rates has no discernable effect on the variables. This is an important finding because prior research demonstrates that social processes and police behavior vary by neighborhood crime rate (Sampson and Bartusch 1998; Sampson et al. 1997). In our sample, however, it appears that variation in neighborhood crime rate does not influence the degree to which procedural justice or effectiveness impact legitimacy evaluations.<sup>12</sup> Importantly, however, the data reveal that the distributive justice effect on trust in the police is contingent on respondents' fear of crime ( $b = .012, p < .05$ ) and perceptions of disorder ( $b = .006, p < .05$ ). Again, using the *margins* command in Stata, Figs. 2 and 3 present graphical depictions of the *distributive justice*  $\times$  *fear of crime* and *distributive justice*  $\times$  *disorder* interaction effects, respectively. Each figure plots the slope of distributive justice on trust in the police for three levels of fear of crime and disorder perceptions (minimum, average, maximum). The graphs demonstrate that the effect of distributive justice on trust in the police is greatest for individuals with the highest levels of fear and perceived disorder. In fact, at the average and lower levels of fear and perceived disorder, distributive justice has little to no effect on trust. Accordingly, trust in law enforcement is influenced by distributive fairness judgments among those people who have particularly high levels of fear of crime and perceive higher than average disorder.<sup>13</sup>

## Discussion

Tyler (1990, 1994, 2004) suggests that procedural justice predicts legitimacy equally well regardless of individual or situational differences. Limited research examines this “invariance thesis,” but findings from organizational and social psychology research provide reason to believe that this might not be the case (Lind and van den Bos 2002). Perhaps procedural fairness on the part of the police is more important to individuals who are uncertain about what to expect from officers. The purpose of this study was to test the generality of Tyler's (1990) process-based model and competing legitimacy frameworks (i.e., distributive justice and police effectiveness). In doing so, we sought to build upon previous studies that have primarily examined cultural and racial invariance. Furthermore, we assessed a theoretically-relevant set of potential moderators and the role of competing antecedents of legitimacy within a single research context. This allowed us to provide more order to an otherwise vast patchwork of studies that only indirectly speak to aspects of the invariance thesis. To that end, three main findings warrant discussion.

Most importantly, the effect of procedural justice on obligation to obey and trust in the police is largely invariant across individual and situational differences within this sample.

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<sup>12</sup> It is also important to note that the simple effects of low collective efficacy and low crime neighborhood also demonstrated significant effects on trust in the police across most models in Table 5 but did not influence individuals' obligation to obey. This finding is consistent with the results revealed in Table 2 and reiterates that obligation to obey is not contextualized in the manner that trust in the police appears to be. Additionally, the models in Table 5 reveal that people from low crime neighborhoods seem less confident that the police will do what is right for the community.

<sup>13</sup> To assess the robustness of all “trust” models presented above, each equation was reestimated using ordered logistic regression given the ordered categorical nature of the trust measure (Long and Freese 2006; Williams 2006). All substantive findings remained unchanged in these analyses. Accordingly, we present the results of the OLS equations to allow for ease of interpretation and comparability to the obligation to obey models.

Perceived procedural fairness on the part of the police was associated with legitimacy outcomes to a similar degree regardless of individual differences in gender, race, age, education level, contact with police, or neighborhood conditions. This is a noteworthy finding from a theoretical standpoint because it demonstrates the generality of procedural justice theory by providing empirical support for the invariance thesis. This result is also important from a policy standpoint. Although there was ample theoretical reason to believe that certain characteristics or situations may produce uncertainty in people, such factors do not seem to affect the degree to which procedural justice influences evaluations of police legitimacy. This is important for the police because they often interact with people who are in uncertain, precarious positions (e.g., people who reside in disadvantaged neighborhoods or belong to a racial group with historically strained police-citizen relations). Thus, procedural fairness on the part of police officers may garner perceptions of legitimacy from the public despite individual psychological differences in uncertainty. Research that explores whether procedurally fair police actions can stifle any psychological uncertainty created by such factors as neighborhood disadvantage or previous experience with racial profiling would be valuable on both theoretical and practical levels (see Tyler and Wakslak 2004). It is important to remember that the purpose of the present study was not to test uncertainty management theory. Rather, we use the theory simply as a framework for understanding why procedural justice *may* have unequal effects on legitimacy across various individual situations. Indeed, future research that is capable of operationalizing key concepts from this framework would advance the procedural justice literature greatly.

Importantly, there was one caveat to the invariance conclusion. The relationship between procedural justice and trust in the police was more pronounced among victims than non-victims (see Fig. 1). Again, this is an important finding from a practical standpoint. The current analyses suggest that it is crucial for officers to exercise their authority in a procedurally fair manner when interacting with victims if they wish to establish trust. The fact that the interaction between victimization and police effectiveness did not significantly influence trust further underscores that victims are more concerned with issues of procedural fairness when ascribing trust to law enforcement. Accordingly, the police can take solace that they can maintain legitimacy in the eyes of the public by ensuring procedural justice despite the difficulty associated with solving some victims' problems. An additional benefit of procedural justice policing when dealing with crime victims is that it may increase the likelihood that such individuals will report future crimes to the police (see



**Fig. 1** Interaction effect between procedural justice and victim

Elliott et al. 2011; Murphy and Barkworth 2014; Tankebe 2013; c.f. Hickman and Simpson 2003; Wells 2007). Furthermore, given the strong evidence regarding the victim-offender overlap (Pyrooz et al. 2014; Jennings et al. 2012), procedurally fair treatment of victims may help sustain greater compliance from a group that is also more likely to engage in criminal behavior. In terms of moving the procedural justice literature forward, research should continue to explore the interaction between victim status and procedural justice and its effect on legitimacy outcomes. Does victimization *produce* psychological uncertainty that causes individuals to focus on procedural fairness issues in an attempt to regain confidence? Or, do victims focus on procedural issues because no outcome (e.g., an offender being arrested) will necessarily undo the victimization they experienced? It is also possible that victims appear to focus on procedural fairness simply because they actually have process experiences with the police to draw from when evaluating officers as opposed to non-victims who may only have vicarious experiences to draw from. Again, research that moves beyond the current study by explicitly operationalizing uncertainty is needed to uncover answers to these questions.

Second, we found that competing antecedents of legitimacy—distributive justice and police effectiveness—also had largely invariant effects on legitimacy. Thus, we have empirical evidence that suggests both normative and instrumental concerns influence legitimacy in a similar way for most people in this sample. However, there were two exceptions to this finding: the interaction effects between distributive justice and (1) fear of crime and (2) perceived neighborhood disorder on trust in the police. These interactions demonstrated that perceptions of distributive fairness influence levels of trust more so for those who are fearful of crime and perceive higher levels of disorder in their neighborhood. Perhaps residents who have greater fear of crime and perceive more disorder are presented with a psychological uncertainty about what to expect from 1 day to the next (e.g., “will I become a victim?” or “does anyone care about our neighborhood?”). As such, they may focus their attention on the distributional fairness of police services when forming an evaluation of the police. Such individuals may turn to officers for protection and care most about whether police services are provided equally to people regardless of wealth or race. If one has little fear of becoming a victim and observes few disorder cues, police services may simply be less relevant. To be clear, procedural fairness still influences legitimacy evaluations for individuals who have greater fear of crime and perceive more disorder. However, such people may actually have to worry about whether the police can effectively combat crime more so than their counterparts which may lead them to focus on instrumental concerns to a greater degree. In contrast to the arguments presented earlier, this uncertainty does not seem to lead people to focus on procedural fairness but rather on the fair distribution of police services. Such uncertainty may be minimized if the police ensure they equally provide services to communities regardless of demographic characteristics. We encourage future researchers to empirically test frameworks such as uncertainty management in conjunction with procedural justice theory to illuminate such issues.

Finally, consistent with prior research, procedural justice exerted a stronger effect on obligation to obey and trust in the police than distributive justice or police effectiveness (Tyler 1990; Tyler and Huo 2002). However, the importance of perceived police effectiveness should not be discounted. In fact, upon considering the possible moderating influence of prior criminal justice system-related experience, effectiveness became more important than procedural justice (see simple effects in Table 4). Individuals who did not have contact with a police officer or had not been victimized in the 6 months prior to the survey appeared to base their legitimacy judgments more so on police effectiveness than procedural fairness. Those without direct justice system-related contact of this sort may

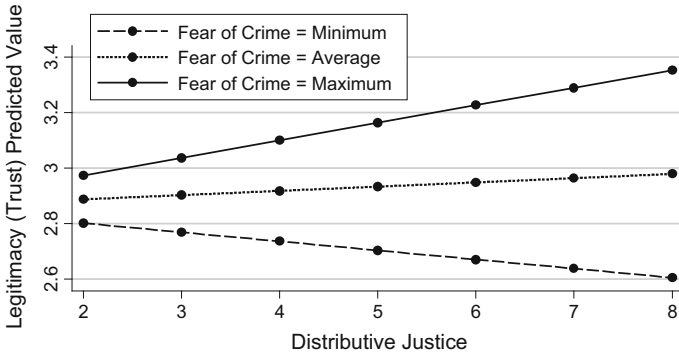
have little information on which to base procedural fairness judgments or do not feel any psychological uncertainty about what to expect from officers because police actions only vicariously influence their attitudes. Thus, these people may focus more on perceptions of effectiveness when affording legitimacy to the police because issues of procedural fairness are not salient to their experiences. Future research in this area should explore the extent to which police contact and victimization *actually produce uncertainty* and the influence this emotion has on perceived legitimacy (see Lind and van den Bos 2002; Lind et al. 1993).

While we were able to examine the procedural justice invariance thesis in important ways, there were several issues we could not address that represent opportunities for future research. First, the current study's results need to be replicated using samples that can provide more generalizable conclusions. Second, our analytic strategy does not speak to the latent factor structure of the key theoretical variables. Future work may provide additional evidence regarding the invariance thesis if examined using structural equation modeling (see, e.g., Jackson et al. 2012a, b; Kochel 2012; Kochel et al. 2013). Third, as discussed earlier there is a growing body of work questioning the conceptual definition of legitimacy. We encourage researchers interested in testing the limits of procedural justice theory to explore these new conceptualizations of legitimacy (Bottoms and Tankebe 2012; Jackson et al. 2012a, b; Tankebe 2013). For instance, does procedural justice still have an invariant effect on police legitimacy when conceptualized in a manner that considers shared values or moral alignment? Tankebe (2013) and others (see, Beetham 1991; Bottoms and Tankebe 2012) have also considered "lawfulness" as another key dimension of legitimacy. Given that our study was unable to capture individuals' perceptions of police lawfulness we encourage future research to do so in an effort to explore the invariance thesis in greater detail.<sup>14</sup>

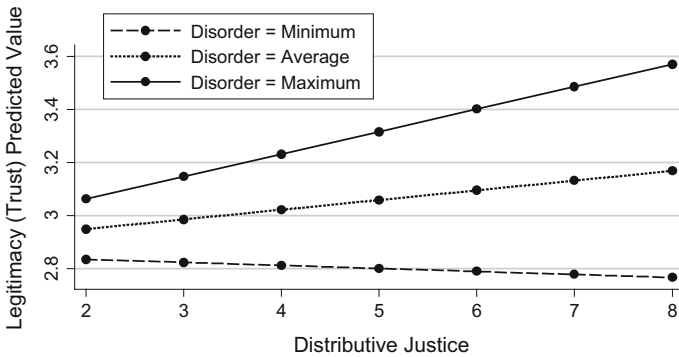
In sum, procedural justice impacts police legitimacy equally well for most people, in most situations. In other words, the procedural justice effect is mostly invariant. Future studies should aim to replicate the current study's invariance tests in different cities, across various structural contexts (e.g., rural versus urban differences), and in countries outside the US. Longitudinal research would also help speak to the causality of the relationships revealed in the present study. This will be particularly relevant when examining the individual differences that may foster psychological uncertainty and, in turn, shape police

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<sup>14</sup> It is also worth noting that we examined several potential interactions in the current analyses. This may introduce a multiple comparisons problem. That is, one risks increasing the chances of Type I error (false positive) with increasing numbers of comparisons. If we uncritically accept this possibility we could use a Bonferroni correction for multiple comparisons that allows us to adjust  $p$  values to protect against the issue (see, Benjamini and Hochberg 1995; Simes 1986). This stringent test would lead us to fail to reject the null hypothesis for all interactions. In other words, the three interactions that are reported as statistically significant would be deemed insignificant after accounting for multiple comparisons. If one accepts this adjustment our findings would suggest that the effects of *all* key theoretical variables on the legitimacy outcomes are invariant across *all* moderators. Indeed, this would provide stronger evidence concerning the overall take-away message of this study—the procedural justice effect (and those of competing antecedents) on legitimacy is invariant. In short, the correction does not necessarily change the *overall* findings. However, we caution against summarily dismissing the significant interaction effects we observed for several reasons. First, we provided a theoretical rationale for exploring the interactions. Accordingly, we are less concerned with the Type I error critique. Second, the cost of obtaining a false positive in the current study is minimal because such evidence would not change the thrust of the invariance conclusion. Conversely, by using a much more restrictive threshold for observing statistical significance (i.e., smaller  $p$ -values), we increase the risk of Type II errors (false negatives). Correcting for multiple comparisons may prematurely lead readers to conclude that the influence of all the key theoretical variables on legitimacy is invariant. Ignoring the potential conditioning influence of particular factors at this point may do a disservice to the literature in the long-term. Indeed, it would be costly if future researchers deemed it unnecessary to explore these relationships in further detail because they happened to be observed in a theoretically-grounded analysis that examined multiple moderating possibilities.



**Fig. 2** Interaction effect between distributive justice and fear of crime



**Fig. 3** Interaction effect between distributive justice and disorder

evaluations. Empirically testing uncertainty management theory is an important task for future research because such a framework may offer insight regarding underlying causal mechanisms (Lind and van den Bos 2002). As Lind and van den Bos (2002, p. 196) argue, “Unfair treatment under conditions of uncertainty gives the uncertainty a particularly sinister complexion, and makes people even more uneasy.” Understanding the types of people who experience (or situations that amplify) psychological uncertainty is important because it may help the police realize the utility of procedurally fair policing as a mechanism to avoid exacerbating strained community relations. Simply put, procedural justice is a technology for increasing community trust. For now, the results of our study lend support to the generality of Tyler’s (1990) procedural justice theory—fair procedures influence obligation to obey and trust in the police equally well across many individual differences.

**Acknowledgments** This research was supported in part by the Bureau of Justice Assistance, Office of Justice Programs, U.S. Department of Justice under Grant No. 2009-DG-BX-K021. The opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors, and do not necessarily reflect those of the Department of Justice.

## Appendix

See Table 6.



**Table 6** Descriptive statistics for neighborhood context variables by low and high crime neighborhoods

	Low crime neighborhood		High crime neighborhood	
	Mean	SD	Mean	SD
Low collective efficacy	19.589	5.282	22.524	5.560
Fear of crime	5.984	1.716	7.085	1.835
Disorder	2.495	2.724	4.218	4.222

## References

- Aiken LS, West SG (1991) Multiple regression: testing and interpreting interactions. Sage, London
- Allison PD (2001) Missing data. Sage, London
- Anderson E (1999) Code of the street: decency, violence, and the moral life of the inner city. WW Norton & Company, New York
- Andridge RR, Little RJ (2010) A review of hot deck imputation for survey non-response. *Inter Stat Rev* 78:40–64
- Baruch Y (1999) Response rate in academic studies: a comparative analysis. *Hum Relat* 52:421–438
- Beetham D (1991) The legitimization of power. Macmillan, London
- Belsley DA, Kuh E, Welsch RE (1980) Regression diagnostics. Wiley, New York
- Benjamini Y, Hochberg Y (1995) Controlling the false discovery rate: a practical and powerful approach to multiple testing. *J R Stat Soc* 57:289–300
- Bottoms A, Tankebe J (2012) Beyond procedural justice: a dialogic approach to legitimacy in criminal justice. *J Crim Law Criminol* 102:119–170
- Bradford B, Huq A, Jackson J, Roberts B (2014) What price fairness when security is at stake? Police legitimacy in South Africa. *Reg Gov* 8:246–268
- Braga AA, Winship C, Tyler TR, Fagan J, Meares TL (2014) The salience of social contextual factors in appraisals of police interactions with citizens: a randomized factorial experiment. *J Quant Criminol* 1–29
- Braithwaite V (2010) Defiance in taxation and governance: resisting and dismissing authority in a democracy. Edward Elgar, Cheltenham
- Brown B, Benedict W (2002) Perceptions of the police: past findings, methodological issues, conceptual issues and policy implications. *Polic Int J Police Strat Manag* 25:543–580
- Cao L, Frank J, Cullen FT (1996) Race, community context and confidence in the police. *Am J Police* 15:3–22
- Cheurprakobkit S (2000) Police–citizen contact and police performance attitudinal differences between Hispanics and non-Hispanics. *J Crim Justice* 28:325–336
- Decker SH (1981) Citizen attitudes toward the police: a review of past findings and suggestions for future policy. *J Police Sci Adm* 9:80–87
- Dillman DA, Phelps G, Tortora R, Swift K, Kohrell J, Berck J, Messer BL (2009) Response rate and measurement differences in mixed-mode surveys using mail, telephone, interactive voice response (IVR) and the Internet. *Soc Sci Res* 38:1–18
- Dunham RG, Alpert GP (1988) Neighborhood differences in attitudes toward policing: evidence for a mixed-strategy model of policing in a multi-ethnic setting. *J Crim Law Criminol* 79:504–523
- Elliott I, Thomas SDM, Ogloff JRP (2011) Procedural justice in contacts with the police: testing a relational model of authority in a mixed methods study. *Psychol Public Policy Law* 17:592–610
- Fuller WA, Kim JK (2005) Hot deck imputation for the response model. *Surv Method* 31:139–149
- Gau JM (2011) The convergent and discriminant validity of procedural justice and police legitimacy: an empirical test of core theoretical propositions. *J Crim J* 39:489–498
- Gau JM (2014) Procedural justice and police legitimacy: a test of measurement and structure. *Am J Crim Justice* 187–205
- Gau JM, Pratt TC (2008) Broken windows or window dressing? Citizens' (in)ability to tell the difference between disorder and crime. *Criminol Public Policy* 7:163–194
- Gau JM, Corsaro N, Stewart EA, Brunson RK (2012) Examining macro-level impacts on procedural justice and police legitimacy. *J Crim Justice* 40:333–343

- Gmel G (2001) Imputation of missing values in the case of a multiple item instrument measuring alcohol consumption. *Stat Med* 20:2369–2381
- Hickman LJ, Simpson SS (2003) Fair treatment or preferred outcome? The impact of police behavior on victim reports of domestic violence incidents. *Law Soc Rev* 37:607–634
- Higgins GE, Wolfe SE, Mahoney M, Walters NM (2009a) Race, ethnicity, and experience: modeling the public's perceptions of justice, satisfaction, and attitude toward the courts. *J Ethn Crim Justice* 7:293–310
- Higgins GE, Wolfe SE, Walters N (2009b) Sex and experience: modeling the public's perceptions of justice, satisfaction, and attitude toward the courts. *Am J Crim Justice* 34:116–130
- Hinds L, Murphy K (2007) Public satisfaction with police: using procedural justice to improve police legitimacy. *Aust N Z J Criminol* 40:27–42
- Homant RJ, Kennedy DB, Fleming RM (1984) The effect of victimization and the police response on citizen's attitudes toward police. *J Police Sci Admin* 12:323–332
- Jackson J, Sunshine J (2007) Public confidence in policing: a neo-Durkheimian perspective. *Br J Criminol* 47:214–233
- Jackson J, Bradford B, Hough M, Myhill A, Quinton P, Tyler TR (2012a) Why do people comply with the law? Legitimacy and the influence of legal institutions. *Br J Criminol* 52:1051–1071
- Jackson J, Bradford B, Stanko EA, Hohl K (2012b) Just authority? Trust in the Police in England and Wales. Routledge, Oxon
- Jackson J, Asif M, Bradford B, Zakar MZ (2014) Corruption and Police Legitimacy in Lahore, Pakistan. *Br J Criminol* 54:1067–1088
- Jennings WG, Piquero AR, Reingle JM (2012) On the overlap between victimization and offending: a review of the literature. *Aggress Viol Behav* 17:16–26
- Johnson D, Maguire ER, Kuhns JB (2014) Public perceptions of the legitimacy of the law and legal authorities: evidence from the Caribbean. *Law Soc Rev* 48:947–978
- Jonathan-Zamir T, Harpaz A (2014) Police understanding of the foundations of their legitimacy in the eyes of the public: the case of commanding officers in the Israel National Police. *Br J Criminol* 54:469–489. doi:10.1093/bjc/azu001
- Jonathan-Zamir T, Weisburd D (2013) The effects of security threats on antecedents of police legitimacy findings from a quasi-experiment in Israel. *J Res Crime Delinq* 50:3–32
- Jonathan-Zamir T, Mastrofski SD, Moyal S (2013) Measuring procedural justice in police–citizen encounters. *Justice Q*. doi:10.1080/07418825.2013.845677
- Kirk DS, Matsuda M (2011) Legal cynicism, collective efficacy, and the ecology of arrest. *Criminology* 49:443–472
- Kirk DS, Papachristos AV (2011) Cultural mechanisms and the persistence of neighborhood violence. *Am J Soc* 116:1190–1233
- Kochel TR (2012) Can police legitimacy promote collective efficacy? *Justice Q* 29:384–419
- Kochel TR, Parks R, Mastrofski SD (2013) Examining police effectiveness as a precursor to legitimacy and cooperation with police. *Justice Q* 30:895–925
- Lee C, Farh JL (1999) The effects of gender in organizational justice perception. *J Org Behav* 20:133–143
- Lee C, Pillutla M, Law KS (2000) Power-distance, gender and organizational justice. *J Manag* 26:685–704
- Lind EA, Tyler TR (1988) The social psychology of procedural justice. Plenum, New York
- Lind EA, Tyler TR (1992) A relational model of authority in groups. *Adv Exp Soc Psychol* 25:115–192
- Lind EA, van den Bos K (2002) When fairness works: toward a general theory of uncertainty management. *Res Org Behav* 24:181–223
- Lind EA, Kulik CT, Ambrose M, de Vera Park MV (1993) Individual and corporate dispute resolution: using procedural fairness as a decision heuristic. *Adm Sci Q* 38:224–251
- Long JS, Freese J (2006) Regression models for categorical dependent variables using Stata. Stata Press, College Station
- Maguire ER, Johnson D (2010) Measuring public perceptions of the police. *Policing Intern J Police Strateg Manag* 33:703–730
- Mason CH, Perreault WD (1991) Collinearity, power, and interpretation of multiple regression analysis. *J Mark Res* 28:268–280
- Maxfield MG (1988) The London metropolitan police and their clients: victim and suspect attitudes. *J Res Crime Delinq* 25:188–206
- Mazerolle L, Bennett S, Antrobus E, Eggs E (2012) Procedural justice, routine encounters and citizen perceptions of police: main findings from the Queensland Community Engagement Trial (QCET). *J Exp Criminol* 8:343–367
- Mazerolle L, Antrobus E, Bennett S, Tyler TR (2013a) Shaping citizen perceptions of police legitimacy: a randomized field trial of procedural justice. *Criminology* 51:33–63

- Mazerolle L, Bennett S, Davis J, Sargeant E, Manning M (2013b) Procedural justice and police legitimacy: a systematic review of the research evidence. *J Exp Criminol* 9:245–274
- Murphy K, Barkworth J (2014) Victim willingness to report crime to police: does procedural justice or outcome matter most? *Vict Offenders* 9:178–204
- Murphy K, Cherney A (2011) Fostering cooperation with the police: how do ethnic minorities in Australia respond to procedural justice-based policing? *Aust N Z J Criminol* 44:235–257
- Murphy K, Cherney A (2012) Understanding cooperation with police in a diverse society. *Br J Criminol* 52:181–201
- Murphy K, Hinds L, Fleming J (2008) Encouraging public cooperation and support for police. *Polic Soc* 18:136–155
- Nix J, Wolfe SE, Rojek J, Kaminski R (2015) Trust in the police: the influence of procedural justice and perceived collective efficacy. *Crime Delinq* 61:610–640
- Piquero AR, Fagan J, Mulvey EP, Steinberg L, Odgers C (2005) Developmental trajectories of legal socialization among serious adolescent offenders. *J Crim Law Criminol* 96:267–298
- Pyrooz DC, Moule RK, Decker SH (2014) The contribution of gang membership to the victim–offender overlap. *J Res Crime Delinq* 51:315–348
- Reisig MD, Correia ME (1997) Public evaluations of police performance: an analysis across three levels of policing. *Policing Intern J Police Strateg Manag* 20:311–325
- Reisig MD, Giacomazzi AL (1998) Citizen perceptions of community policing: are attitudes toward police important? *Policing Intern J Police Strateg Manag* 21:547–561
- Reisig MD, Parks RB (2000) Experience, quality of life, and neighborhood context: a hierarchical analysis of satisfaction with police. *Justice Q* 17:607–630
- Reisig MD, Bratton J, Gertz MG (2007) The construct validity and refinement of process-based policing measures. *Crim Justice Behav* 34:1005–1028
- Reisig MD, Wolfe SE, Holtfreter K (2011) Legal cynicism, legitimacy, and criminal offending: the non-confounding effect of low self-control. *Crim Just Behav* 38:1265–1279
- Reisig MD, Tankebe J, Meško G (2012) Procedural justice, police legitimacy, and public cooperation with the police among young Slovene adults. *J Crim Just Secur* 2:147–164
- Reisig MD, Tankebe J, Meško G (2014) Compliance with the law in Slovenia: the role of procedural justice and police legitimacy. *Eur J Crim Policy Res* 20:259–276
- Sampson RJ, Bartusch DJ (1998) Legal cynicism and (subcultural) tolerance of deviance: the neighborhood context of racial difference. *Law Soc Rev* 32:777–804
- Sampson RJ, Raudenbush SW, Earls F (1997) Neighborhoods and violent crime: a multilevel study of collective efficacy. *Science* 277:918–924
- Sargeant E, Murphy K, Cherney A (2014) Ethnicity, trust and cooperation with police: testing the dominance of the process-based model. *Eur J Criminol* 11:500–524
- Sharp EB, Johnson PE (2009) Accounting for variation in distrust of local police. *Justice Q* 26:157–182
- Simes RJ (1986) An improved Bonferroni procedure for multiple tests of significance. *Biometrika* 73:751–754
- Sunshine J, Tyler TR (2003) The role of procedural justice and legitimacy in shaping public support for policing. *Law Soc Rev* 37:513–548
- Sweeney PD, McFarlin DB (1997) Process and outcome: gender differences in the assessment of justice. *J Org Behav* 18:83–98
- Tabachnick BG, Fidell LS (2007) Using multivariate statistics. Allyn & Bacon, Boston
- Tankebe J (2008) Police effectiveness and police trustworthiness in Ghana: an empirical appraisal. *Criminol Crim Just* 8:185–202
- Tankebe J (2009a) Public cooperation with the police in Ghana: does procedural fairness matter? *Criminology* 47:1265–1293
- Tankebe J (2009b) Self-help, policing, and procedural justice: Ghanaian vigilantism and the rule of law. *Law Soc Rev* 43:245–270
- Tankebe J (2013) Viewing things differently: the dimensions of public perceptions of police legitimacy. *Criminology* 51:103–135
- Tankebe J (2014) Police Legitimacy. In: Reisig MD, Kane R (eds) *The Oxford handbook on police and policing*. Oxford University Press, Oxford, pp 238–259
- Taylor RB, Wyant BR, Lockwood B (2014) Variable links within perceived police legitimacy? Fairness and effectiveness across races and places. *Soc Sci Res* 49:234–248
- Thau S, Aquino K, Wittek R (2007) An extension of uncertainty management theory to the self: the relationship between justice, social comparison orientation, and antisocial work behaviors. *J Appl Psychol* 92:250–258
- Thibaut J, Walker L (1975) *Procedural justice: a psychological analysis*. Lawrence Erlbaum, Hillsdale

- Thurman QC, Reisig MD (1996) Community-oriented research in an era of community-oriented policing. *Am Behav Sci* 39:570–586
- Tittle CR (1995) *Control balance: toward a general theory of deviance*. Westview, Boulder
- Trinkner R, Cohn ES (2014) Putting the “social” back in legal socialization: procedural justice, legitimacy, and cynicism in legal and nonlegal authorities. *Law Hum Behav* 38:602–617
- Tyler TR (1990) *Why people obey the law*. Yale University Press, New Haven
- Tyler TR (1994) Governing amid diversity: the effect of fair decision making procedures on the legitimacy of government. *Law Soc Rev* 28:809–831
- Tyler TR (2000) Multiculturalism and the willingness of citizens to defer to law and to legal authorities. *Law Soc Inq* 25:983–1019
- Tyler TR (2003) Procedural justice, legitimacy, and the effective rule of law. *Crime Justice* 30:283–357
- Tyler TR (2004) Enhancing police legitimacy. *Ann Am Acad Polit Soc Sci* 593:84–99
- Tyler TR (2005) Policing in black and white: ethnic group differences in trust and confidence in the police. *Police Q* 8:322–342
- Tyler TR, Huo Y (2002) *Trust in the law: encouraging public cooperation with the police and courts*. Russell Sage Foundation, New York
- Tyler TR, Jackson J (2013) Future challenges in the study of legitimacy and criminal justice. In: Tankebe J, Liebling A (eds) *Legitimacy and criminal justice: an international exploration*. Oxford University Press, Oxford
- Tyler TR, Jackson J (2014) Popular legitimacy and the exercise of legal authority: motivating compliance, cooperation, and engagement. *Psychol Public Policy Law* 20:78–95
- Tyler TR, Wakslak CJ (2004) Profiling and police legitimacy: procedural justice, attributions of motive, and acceptance of authority. *Criminology* 42:253–281
- Tyler TR, Boeckmann RJ, Smith HJ, Huo YJ (1997) *Social justice in a diverse society*. Westview Press, Boulder
- Van Craen M (2013) Explaining majority and minority trust in the police. *Justice Q* 30:1042–1067
- Van den Bos K (2001) Uncertainty management: the influence of uncertainty salience on reactions to perceived procedural fairness. *J Personal Soc Psychol* 80:931–941
- Van den Bos K, Wilke HA, Lind EA (1998) When do we need procedural fairness? The role of trust in authority. *J Personal Soc Psychol* 75:1449–1458
- Weber M (1946) Politics as a vocation. In: Gerth HH, Wright Mills C (Translated and edited), *From Max Weber: essays in sociology*. Oxford University Press, New York, pp 77–128
- Weitzer R, Tuch SA (1999) Race, class, and perceptions of discrimination by the police. *Crime Delinq* 45:494–507
- Weitzer R, Tuch SA (2005) Racially biased policing: determinants of citizen perceptions. *Soc Forces* 83:1009–1030
- Weitzer RJ, Tuch SA (2006) *Race and policing in America: conflict and reform*. Cambridge University Press, New York
- Wells W (2007) Type of contact and evaluations of police officers: the effects of procedural justice across three types of police–citizen contacts. *J Crim Justice* 35:612–621
- Williams R (2006) Generalized ordered logit/partial proportional odds models for ordinal dependent variables. *Stata J* 6:58–82
- Willis JJ (2014) A Recent History of the Police. In: Reisig MD, Kane R (eds) *The Oxford handbook on police and policing*. Oxford University Press, Oxford, pp 3–33
- Wilson JQ, Kelling GL (1982) Broken windows. *Atl Mon* 249:29–38
- Wolfe SE (2011) The effect of low self-control on perceived police legitimacy. *J Crim Justice* 39:67–74
- Wu Y, Sun IY, Triplett RA (2009) Race, class or neighborhood context: which matters more in measuring satisfaction with police? *Justice Q* 26:125–156
- Wu Y, Lake R, Cao L (2013) Race, social bonds, and juvenile attitudes toward the police. *Justice Q*. doi:10.1080/07418825.2013.778325
- Zhao JS, Tsai CF, Ren L, Lai YL (2014) Public satisfaction with police control of disorder crime: does the public hold police accountable? *Justice Q* 31:394–420