Are Trustworthiness and Legitimacy 'Hard to Win, Easy to Lose'? A Longitudinal Test of the Asymmetry Thesis of Police-Citizen Contact

Thiago R. Oliveira[1] ⬤ · **Jonathan Jackson[1]** · **Kristina Murphy[2]** · **Ben Bradford[3]**

Abstract

Objectives Test the asymmetry thesis of police-citizen contact that police trustworthiness and legitimacy are affected more by negative than by positive experiences of interactions with legal agents by analyzing changes in attitudes towards the police after an encounter with the police. Test whether prior attitudes moderate the impact of contact on changes in attitudes towards the police.

Methods A two-wave panel survey of a nationally representative sample of Australian adults measured people's beliefs about police trustworthiness (procedural fairness and effectiveness), their duty to obey the police, their contact with the police between the two waves, and their evaluation of those encounters in terms of process and outcome. Analysis is carried out using autoregressive structural equation modeling and latent moderated structural models.

Results The association between both process and outcome evaluation of police-citizen encounters and changes in attitudes towards the police is asymmetrical for trust in police effectiveness, symmetrical for trust in procedural fairness, and asymmetrical (in the opposite direction expected) for duty to obey the police. Little evidence of heterogeneity in the association between encounters and trust in procedural fairness and duty to obey, but prior levels of perceived effectiveness moderate the association between outcome evaluation and changes in trust in police effectiveness.

Conclusions The association between police-citizen encounters and attitudes towards the police may not be as asymmetrical as previously thought, particularly for changes in trust in procedural fairness and legitimacy. Policy implications include considering public-police interactions as 'teachable moments' and potential sources for enhancing police trustworthiness and legitimacy.

Keywords Legitimacy · Police-citizen encounters · Panel analysis · Policing · Procedural justice

✉ Thiago R. Oliveira
  t.rodrigues-oliveira@lse.ac.uk

Extended author information available on the last page of the article

People come into contact with the police in different ways and for different reasons. There are regulatory encounters, e.g. someone might be stopped by an officer on foot or in a vehicle for investigatory purposes. There are service-style encounters, e.g. someone might report having been a victim of crime to the police or come forward with information vital to police intelligence. There are indirect encounters, e.g. someone might see officers patrolling their streets and interacting with residents. Whatever the context, moments of police-citizen contact are numerous and often important for both parties—sometimes extremely so. There is a good deal of evidence that police-citizen encounters are 'teachable moments', where people update their attitudes towards the trustworthiness (can officers be trusted to do what they supposed to do?) and legitimacy of legal institutions (does the institution of police have the right to power and authority to govern?) based on their experience of officer behavior (e.g. Tyler et al. 2014). On this account, individuals infer from such experiences whether police can generally be trusted to behave in a fair manner, be effective at fighting crime, and abide by the rules—and whether officers direct their power towards the right ends, seek to achieve these via normatively justifiable means, and are, therefore, entitled to be obeyed (Pósch et al. 2020).

Crucially for policing policy and practice, perceived police trustworthiness and legitimacy (or their absence) can have significant consequences for people's law-related behavior, such as reporting crimes, coming forward with intelligence, complying with police orders, accepting police decisions, and even abiding by the law (Murphy et al. 2008; Slocum et al. 2016; Trinkner et al. 2018; Tyler and Jackson 2014; Wiley and Esbensen 2016). It is vital that police handle their encounters with citizens properly—as Skogan (2006, p. 118) put it: 'Popular opinion matters in part because widespread confidence in the police makes their work easier and more effective.' Yet, in the same paper, Skogan argues that encounters experienced *negatively* by citizens are associated with a decrease in perceived trustworthiness in the police, while encounters experienced *positively* are not associated with any increase. If police-citizen contact has such an asymmetrical effect, then there are significant implications for policing policy and practice, particularly in terms of the ability of the police to improve public trust rather than 'merely' avoiding damage to it. This would also be a significant challenge to procedural justice theory, which posits, in part, that positive police-citizen encounters can help to enhance perceived trustworthiness and legitimacy and therefore increase compliance and cooperation.

There is, indeed, important empirical evidence that poor quality contact can have a strong negative effect on perceived trustworthiness, while good contact can at best have only a weak positive effect (Bradford et al. 2009; Myhill and Bradford 2012; Skogan 2006). At the heart of the 'asymmetry thesis' is the idea that police have greater scope to reduce public trust through badly-handled interactions than they have to increase perceived trustworthiness through well-handled interactions. Evidence that trustworthiness is easy to lose and hard to win has come from a number of cross-sectional surveys conducted in the US and UK. Prior studies testing the asymmetry thesis have relied on cross-sectional survey data to draw their conclusions. Yet, the asymmetry thesis is a theory of change and cross-sectional surveys cannot speak to the question of whether positive and negative experience are associated with changes in public opinion as they cannot not take into account within-individual variation before and after an encounter (cf. Jackson and Pósch 2019; Nagin and Telep 2017). Without longitudinal data, one's prior attitudes about police (before an encounter takes place) are not taken into account.

Only a handful of panel studies have estimated change over time, comparing before and after perceptions of an encounter to explain change in trust and/or legitimacy (see Bradford et al. 2014; Gau 2010; Myhill and Bradford 2012; Rosenbaum et al. 2005; Slocum

et al. 2016; Slocum 2018; Tyler 2017; Tyler and Fagan 2008). But even these studies either excluded people without recent experience with police from the analysis or excluded such individuals from the design itself (surveying only people with recent experience with the police). As a result, they could not compare attitudinal changes among individuals influenced by well- and poorly-handled encounters with the police with individuals who had had no contact whatsoever. Given the centrality of police-citizen contact to policing policy and research, this is a surprising gap in the literature that needs to be filled.

In this paper we present the first longitudinal test of the asymmetry thesis of police-citizen contact. Drawing on data from a two-wave panel study of Australian citizens,[1] we provide the most complete empirical assessment of the asymmetry thesis that has hitherto been attempted. On the one hand, we break down key constructs into a number of dimensions related to perceived police trustworthiness (differentiating between trust in police procedural fairness and trust in police effectiveness) and normatively grounded sense of duty to obey (legitimacy). On the other hand, we fit two complementary statistical models to (a) test the asymmetry thesis of police-citizen contact using longitudinal data and (b) assess whether prior levels of attitudes towards legal authorities moderate the impact of contact on changes in trustworthiness and legitimacy.

The remainder of the paper proceeds as follows. First, we clarify the concepts of trustworthiness and legitimacy in the context of public attitudes towards legal authority. This is an important preliminary step, because there has been a good deal of recent debate over these concepts and how they should be measured (Bottoms and Tankebe 2012; Hamm et al. 2017; Jackson 2018; Jackson and Bradford 2019; Jackson and Gau 2015; Trinkner 2019; Tyler and Jackson 2014). Second, we review evidence from cross-sectional surveys that assessed the impact of police-citizen encounters on attitudes towards the police. Third, we review evidence from panel studies. Fourth, we identify the gaps in the literature and how our study extends research in the field. Fifth, we present the methods and results of our study. Finally, our conclusions focus on the implications of our findings as well as future directions for research in this important area of criminological debate.

Clarifying Concepts: Trustworthiness and Legitimacy in Police-Citizen Relations

Studies of public attitudes towards the police often employ concepts loosely related to police effectiveness and procedural fairness. Previous studies have called them (1) perceived fairness and perceived effectiveness, (2) public confidence in policing, (3) trust in the police, (4) trust in procedural justice and trust in police effectiveness, and (5) legitimacy (differentiating between procedural justice, distributive justice, effectiveness and lawfulness). For example, procedural justice theory specifies that perceived fairness and perceived effectiveness are potential sources of legitimacy (Sunshine and Tyler 2003), while Tankebe (2013) assumes that they are constituent components of legitimacy (for discussion, see Jackson and Bradford 2019; Trinkner 2019; Sun et al. 2019). In our view, the most important conceptual distinction is between (a) task-specific public evaluations and expectations of police conduct (e.g., people's perceptions of the effectiveness and

---

[1] The dataset analyzed during the current study, as well the code (R and M*plus*) necessary to replicate all the analyses, are available from the corresponding author upon request.

fairness of officers) that we call 'perceived trustworthiness', ascribed states and qualities that mean that they can be trusted to do what they are expected to do (cf. Hardin 1996) and (b) judgements about the legitimacy of the police (the belief that police have a valid claim to exercise power and therefore have the authority to enforce the law and dictate appropriate behavior).

Perceived trustworthiness relates to the core characteristics and actions of the police that lead them to be more or less trusted to do the things that they are tasked to do (under conditions of uncertainty). Two key dimensions of police conduct are fairness (particularly in relation to process) and effectiveness (particularly in relation to the outcomes police produce). When citizens have positive evaluations and expectations that officers treat people with respect and dignity, make neutral, transparent and accountable decisions; and when citizens have positive evaluations and expectations that officers turn up quickly in emergencies, deter crime, and catch criminals, those citizens will be more likely to act in ways that manifest a willingness to assume risk and be vulnerable. While prior studies might have employed concepts such as confidence, trust, and perceived police fairness and effectiveness, we premise that they are all referring to the perceived *trustworthiness* of police.[2] That being said, we will use expressions such as 'trust in procedural fairness' and 'trust in police effectiveness' throughout the paper to keep the prose crisp—the reader should be clear that we are referring to the perceived trustworthiness of police here.

We test the asymmetry thesis using panel data in regard not only to trust in police fairness and effectiveness, but also to perceptions of police legitimacy. Legitimacy is the overarching judgment regarding the institution's credible, or otherwise, claim to exercise power (appropriateness) and govern citizen behavior (entitlement). So while public assessments of police fairness and effectiveness relate to positive and negative evaluations and expectations regarding whether officers can be trusted to do what they are tasked to do—where one or both of these might be important sources of legitimacy—legitimacy relates to the ascription of appropriateness and entitlement by citizens to the institution that officers represent. Appropriateness judgements (perceived right to power) are sometimes operationalized as institutional trust, or confidence, or normative alignment, while entitlement judgements (perceived right to dictate appropriate behavior) are invariably operationalized as felt obligation to obey. We focus in the current study on obligation to obey police, since the survey did not measure the other constituent component of legitimacy, namely appropriateness judgements.

---

[2] We are not implying that perceived trustworthiness of police is a second-order latent construct reflected by constructs such as trust in procedural fairness and trust in police effectiveness. These are separate constructs, both theoretically and empirically – as we demonstrate in Appendix A.1. We use 'trustworthiness' as an alternative label to 'perception', i.e. rather than call people's attitudes towards the procedural fairness and effectiveness of the police as 'perceived procedural fairness' and 'perceived effectiveness', we treat them as the extent to which police are seemed as trustworthy in the context of acting in procedurally just and effective ways.

Evidence from Cross-Sectional Surveys

It was Skogan (2006) who first popularized the idea of asymmetry in the impact of police-citizen encounters on public attitudes.[3] On the one hand, people who have had a 'bad' recent police-citizen encounter tend to have more negative attitudes towards the police, compared to people with no recent experience. On the other hand, people who have had a 'good' recent police-citizen encounter are either no different in their attitudes, or only slightly more positive, compared to people with no recent experience. Skogan (2012) speculated that negativity bias may be at play here (for reviews of the psychological literature, see Baumeister et al. 2001; Rosin and Soyzman 2001). People may more readily attend to—and learn more powerful lessons from—negative experiences, either dismissing good experiences as exceptions to the norm, or treating good service as a given. Whether or not this is correct, if teachable moments only count when they go against the police, then the implications for policing policy are not very optimistic—as Skogan (2006, p. 119) says: "The empirical message is unfortunately: 'You can't win, you can just cut your losses'." Yet, according to procedural justice theory police can improve matters by acting in fair and respectful ways, making neutral, accountable and transparent decisions, conveying trustworthy motives, and allowing citizens a voice in their interactions with officers. If it is only procedural *in*justice that counts, then this is a major challenge to the theory.

In the first test of the asymmetry thesis, Skogan (2006) drew on data from eight cross-sectional surveys—telephone surveys in Chicago (2003), City of Indianapolis (1996), New York City (2002), St Petersburg, Florida (1997), Seattle (2003) and Washington DC (1999 and 2000), and face-to-face surveys in England and Wales (1992) and St Petersburg, Russian Federation (2003). Skogan fitted a series of linear models to estimate the partial association between contact (whether people had come into contact with the police recently and if they did, whether they were satisfied or dissatisfied with the officer or officers) and confidence in police (attitudes towards the effectiveness and public engagement of the police).[4] Conceptualizing evaluations of the police along a single dimension, public opinion was measured as a uni-dimensional construct, ranging from negative views to positive views towards the police.

Distinguishing between police-initiated encounters and citizen-initiated encounters—and controlling for various socio-demographic factors in the modeling—Skogan (2006) found that people with a negatively-received recent contact were, on average, much less confident in the police (i.e. they tended to believe that officers were ineffective and did not engage properly with their community) compared to people without any recent contact. Strikingly, however, people with a positively-received recent contact were only slightly more confident in the police (on average) compared to people without recent contact. While the statistical effect of police-initiated contact was a little more asymmetric than citizen-initiated contact (i.e., the difference between positively- and negatively-received contact was a little bigger for citizen-initiated contact), Skogan inferred from the analysis

---

[3] Though similar results can be found before that (see, for instance, Brown and Benedict, 2002), Skogan's (2006) study was the first to explicitly formulate the idea that encounters with the police are asymmetrically associated with public confidence in policing.

[4] The single-factored construct was based on six questions, all using four-point scales. Three of them asked "how good a job" police were doing in preventing crime, keeping order, and helping victims. The other three tracked perceived police responsiveness to community concerns and whether police were dealing with problems that really concerned residents (Skogan, 2006, p. 107).

of the eight surveys that negatively experienced contact may reduce confidence, while positively experienced contact may at best only weakly improve confidence.[5]

An alternative approach is to break public attitudes down into a number of core constituent parts. Bradford et al.'s (2009) face-to-face survey of Londoners (fielded in 2005 and 2006) focused on perceived police trustworthiness and differentiated between: (a) perceived effectiveness at fighting crime and meeting the needs of victims; (b) perceived fairness when interacting with citizens (procedural and distributive fairness); and (c) perceived engagement with the community. They found that asymmetry was present in the statistical effect of contact on perceptions of police effectiveness, but the statistical effects were more symmetrical for perceptions of police fairness and community engagement.[6] Considering that Skogan's measures focused on effectiveness rather than fairness, this may partly explain the difference in findings (although both studies included measures of community engagement). Like Skogan (2006), Bradford et al. (2009) found greater asymmetry in police-initiated contact compared to citizen-initiated contact.

Overall, similar results have been found in a number of different studies in the US and UK (Bradford 2017; Bradford et al. 2009; Jackson et al. 2012, 2013; Rengifo et al. 2019; Skogan 2006; Slocum 2018; Trinkner et al. 2018). People who have had unsatisfactory interactions with legal officials tend to have less positive attitudes towards the police than people with satisfactory interactions. There are two slight complications. First, the distinction between police- and public-initiated encounters seems to be important. When the focus is on police stops or invasive and involuntary interactions, the relationship between contact and attitudes seems to be strongly asymmetrical, but when the focus is on voluntary citizen-initiated interactions, the relationship seems more symmetrical. When citizens initiate an interaction, police behavior could at least slightly boost perceived trustworthiness and legitimacy. Second, unpacking the concept of perceived trustworthiness seems to make some difference. While police-citizen encounters appear to have a strong asymmetrical relationship with trust in police effectiveness, slightly more symmetrical relations are found in terms of trust in police fairness (Bradford 2017; Bradford et al. 2009; Jackson et al. 2012, 2013).

Yet, and this is the launch-pad for the current study, cross-sectional studies do not take the all-important temporal ordering into account. The asymmetry thesis is a theory of change, in that it predicts shifts in people's attitudes caused by positively-received and/or negatively-received police-citizen contact. People's prior levels of perceived police trustworthiness and legitimacy could play a key role, but cross-sectional surveys cannot take into account people's previous attitudes into account. They cannot assess whether encounters are indeed associated with change. Skogan (2012) suggests that people might have already formed ideas about the police before they come into contact with them, thus bringing 'priors' into any interactions, and that the "path towards untangling the impact of

---

[5] Bradford (2010) built on Skogan's (2006) findings from 1992 British Crime Survey (BCS) by analyzing data from the 1992, 1996, 2000 and 2003/2004 waves of the BCS. He found that over time the positive effect of satisfactory contact on confidence grew (using the survey question 'How good a job are the local police doing? Very good, fairly good, fairly bad or very bad').

[6] In the main analysis, the quality of contact was measured by asking people how satisfied or dissatisfied they were with the 'service provided by/contact with the officer or officers', i.e. there was no differentiation between the quality of process and the quality of outcome. However, follow-up analysis of the experience of victims allowed a breakdown in people's perceptions, suggesting that it was the processes with which police interact with people that was more important than the outcomes that the police can offer (for similar findings showing process matters more than outcome to victims of crime see Murphy and Barkworth, 2014).

prior expectations would be to gather over-time or panel data" (2012, p. 276). It could, for example, be the case that respondents with more negative views of the police prior to the encounter tend to be more dissatisfied with the experience, while respondents with more positive views of the police prior to the encounter might expect the encounter to be positive and therefore discount such experience. What, we believe, is actually at stake in the debate regarding contact and public attitudes towards the police is the extent to which there is an association between interactions with legal officials and *changes* in public opinion. In order to assess whether police-citizen encounters are associated with changes in attitudes towards the police, panel studies are necessary.

Evidence from Panel Studies

A number of panel studies have in fact addressed the link between contact and attitudes towards the police. But, crucially, not a single study has assessed whether the impact of perceived quality of police behavior during police-citizen encounters on changes in trustworthiness and legitimacy is the same for satisfactory and unsatisfactory interactions *in comparison with* no contact.

There are two groups of panel studies that focused on the relationship between perceived police behavior and public opinion about legal institutions[7]: (a) those that model change in public opinion but exclude from the analysis respondents with no contact with police, so they did not test the asymmetry thesis because they could not compare positive and negative encounters with no contact (Bradford et al. 2014; Gau 2010; Rosenbaum et al. 2005; Sargeant et al. 2018; Tyler 2017; Tyler and Fagan 2008); and (b) those that included all respondents in the analysis, thus providing some basis for the assessment of the asymmetry thesis, but did not model change in opinion (Slocum et al. 2016; Slocum and Wiley 2018; Tyler and Fagan 2008).

Among studies in the first group, the most common empirical strategy involves drawing on data from two-wave panel surveys, with researchers analyzing only respondents who had contact with police between waves 1 and 2. Often fitting autoregressive models (wherein one includes a lagged dependent variable as one of the covariates), such studies account for changes in attitudes towards legal institutions. However, by excluding respondents with no contact, they are not able to assess whether the impact of encounters is asymmetrical. One of the first studies to rely on panel data, Rosenbaum et al. (2005) rely on the high coefficients of lagged response variables to suggest that public attitudes towards the police are highly stable over time. The authors also speculate that a negative predisposition may simply cause someone to selectively interpret encounters with the police as more negative (Rosenbaum et al. 2005, p. 359). A similar conclusion was reached by

---

[7] There are of course a number of longitudinal studies that focused on the development of attitudes towards the police and the law over time, especially drawing on data from the *Pathways to Desistance* (Mulvey 2016). However, these studies do not focus on the link between perceived quality of police behavior during contact and changes in attitudes towards the police. Some studies focused on changes in legal attitudes over time and did not include information regarding police-citizen encounters (Kaiser and Reisig 2019; Piquero et al., 2005; Schubert et al., 2016), whereas others investigated the legal socialization process while taking into account previous arrests (Augustyn, 2016; Fine et al., 2016; Fine et al., 2017) and whether respondents had been picked up by the police (Fine and Cauffman, 2015; McLean et al., 2018) – but none of them engaged in comparisons of expected changes in attitudes between respondents who satisfactory, unsatisfactory, and no police contact.

Sargeant et al. (2018) using a similar analytic strategy. Drawing on panel data, the authors assessed whether pre-existing defiant attitudes shaped citizens' satisfaction with police-citizen encounters in Australia and concluded that respondents who were more defiant toward police before their contact with police were less likely to be satisfied with the process of their police interaction.

Another two-wave study that modeled changes in attitudes towards the police after dropping respondents with no contact with police between waves 1 and 2 was Tyler and Fagan's (2008) panel survey of New York City residents. The authors sought to disentangle the effect of process (specifically, citizen perceptions of the fairness of treatment and decision-making) from the effect of outcome (specifically, citizen perceptions of the favorability of the outcome) on perceived police legitimacy (measured using indicators of obligation, trust and confidence, and identification with the police). While their findings suggest that satisfaction with process is far more important than outcome favorability in shaping changes in perceived legitimacy, they do not speak to a potential symmetry in the impact of contact.

As examples of the second group of studies, Tyler and Fagan's (2008) second set of analyses included all respondents and attempted to test the asymmetry thesis by comparing levels of perceived legitimacy at Time 2 with quality of contact, but did not include respondents' prior levels of legitimacy. Comparing levels of trustworthiness or perceived legitimacy between people who had positive and negative contact with people with no contact, but without taking into account people's prior attitudes towards the police, was also the strategy employed by Slocum et al. (2016) and Slocum and Wiley (2018). While their goal was not to assess asymmetry in the impact of police-citizen encounters, they grouped respondents based on their satisfaction with contact and used respondents with no police-initiated contact as the reference group—but the focus was not on change in public opinion from before to after the encounter.

To our knowledge, only one study has modeled changes in public opinion *and* compared perceived quality of police contact with a group of people with no contact. Drawing on data from a two-wave panel using a sample of 16 neighborhoods in England, Myhill and Bradford (2012) grouped respondents on the basis of 'type of contact' they had between wave 1 and wave 2. They then modeled changes in trust in police effectiveness by fitting autoregressive linear regression models. Results indicate a somewhat symmetrical relationship between citizen-initiated contact and trustworthiness, but a strong asymmetrical relationship both in terms of satisfaction with police stops and contact after being a victim of a crime. Unfortunately, Myhill and Bradford only had measures related to perceived police effectiveness. So they could not model changes in other psychological constructs such as trust in procedural fairness and judgements about the legitimacy of the police.

Summary and Literature Gap

It seems on the basis of extant evidence that: (a) the association between trust in police effectiveness and satisfaction with the encounter is more asymmetrical than it would be for police fairness (Bradford et al. 2009); (b) people evaluate their encounters with legal officials in terms of process and outcome as two distinct dimensions (Bradford et al. 2014; Tyler and Fagan 2008); and (c) the impact of involuntary police-initiated contact is more asymmetrical than self-initiated contact (Jackson et al. 2012; Myhill and Bradford 2012). In this study, we extend the literature by presenting what is, to our knowledge, the first longitudinal test of the asymmetry thesis using a relatively comprehensive set of trustworthiness
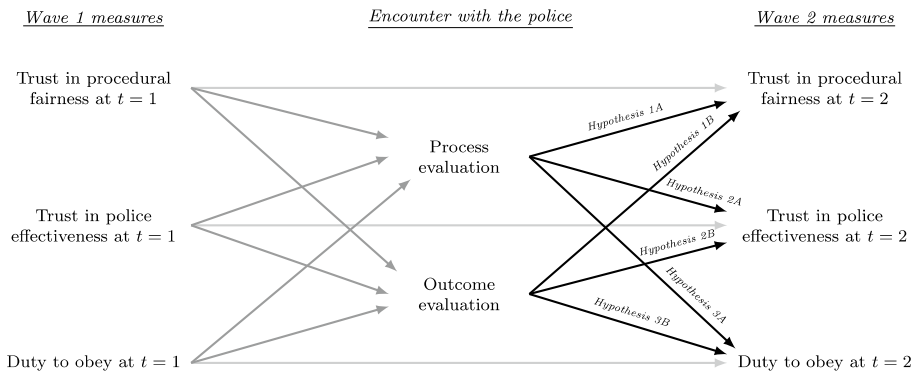
Fig. 1 Theorized diagram: police-citizen contact and public attitudes towards the police. *Note*: Two models were fitted based on this theorized diagram, one assessing the influence of process evaluation (hypotheses 1A, 2A, 3A) and another assessing the influence of outcome evaluation (hypotheses 1B, 2B, 3B)

and legitimacy measures—i.e. we analyze whether police-citizen encounters are associated with *changes* in satisfaction with police when compared to respondents who did not experience contact between two waves of data.

The current study advances previous work in a number of ways. We model no contact, good contact, neutral contact, and bad contact as predictors of change in public attitudes towards the police (considering two waves of data, lagged dependent variable models are fitted considering police-citizen encounters that happened between wave 1 and wave 2). Public attitudes are measured as perceived police trustworthiness (which is disaggregated into effectiveness and procedural fairness) and judgements about police legitimacy (as represented by respondents' normatively grounded duty to obey the police). Perceived quality of police-citizen encounters ('good', 'neutral', or 'bad') is measured as evaluations of both the procedural fairness enacted by the officer and the outcome favorability. We rely on two complementary statistical models to: (a) test the asymmetry thesis; and (b) assess the extent to which previous levels of police trustworthiness and legitimacy moderate the impact of different police-citizen encounters on changes in attitudes.

The asymmetry thesis posits that the impact of unsatisfactory encounters is stronger in magnitude than the impact of satisfactory encounters on attitudes towards the police. If this is true, when 'no contact' is the reference group the absolute value of the (expectedly negative) coefficient of 'negative' contact will be greater than the absolute value of the (expectedly positive) coefficient of 'positive' contact. We test this hypothesis in relation to (1) trust in procedural fairness, (2) trust in police effectiveness, and (3) duty to obey the police, while disentangling contact evaluation between process (A) and outcome (B). A diagram displaying all the theorized relations being tested can be found in Fig. 1. For each response and explanatory variable, we examine the predicted values of attitudes controlling for prior attitudes and in comparison with people with no contact with police during the relevant period.

- *Hypothesis 1A*: the association between process evaluation and trust in procedural fairness is asymmetrical.
- *Hypothesis 1B*: the association between outcome evaluation and trust in procedural fairness is asymmetrical.
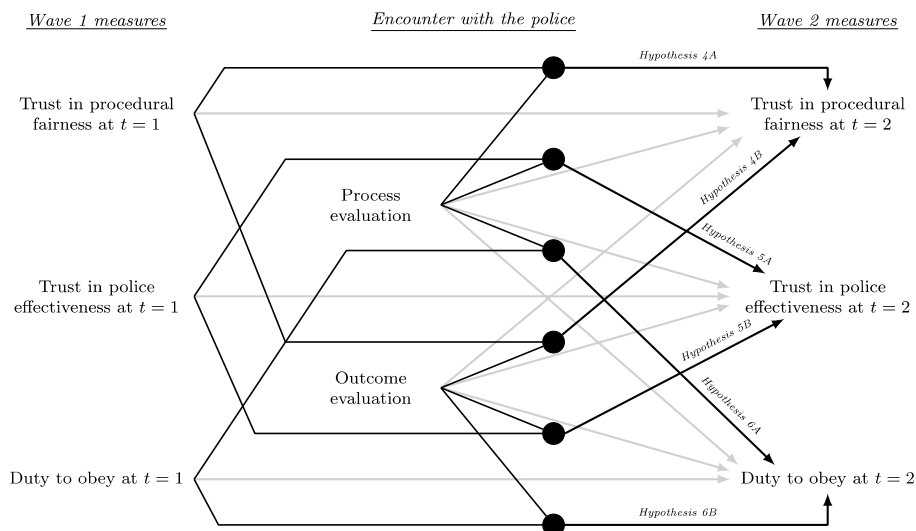
Fig. 2 Theorized diagram: is the impact of police-citizen contact moderated by prior attitudes?. *Note*: Three models were fitted based on this theorized diagram, one checking for heterogeneity effects on changes in trust in procedural fairness (hypotheses 4A and 4B), one for changes in trust in police effectiveness (hypotheses 5A and 5B), and one for changes in duty to obey (hypotheses 6A and 6B)

- *Hypothesis 2A*: the association between process evaluation and trust in police effectiveness is asymmetrical.
- *Hypothesis 2B*: the association between outcome evaluation and trust in police effectiveness is asymmetrical.
- *Hypothesis 3A*: the association between process evaluation and duty to obey the police is asymmetrical.
- *Hypothesis 3B*: the association between outcome evaluation and duty to obey the police is asymmetrical.

Additionally, we draw on Skogan's (2012) discussion that people might bring 'priors' that could influence how they perceive an encounter. If people perceive the quality of police behavior during an encounter differently, based on expectations formed from prior attiudes (Sargeant et al. 2018), then the impact of police-citizen encounters could vary conditional on those prior attitudes. Based on procedural justice theory, however, we would expect that the impact of perceived quality of police behavior during encounters on changes in public opinion would be broadly the same regardless of one's prior levels of perceived police trustworthiness and legitimacy. If this were not the case then the change in attitudes predicted by theory—based on evaluations of process fairness which vary across encounters—would be much less likely to occur.

In order to assess this further, a second group of hypotheses was established. A second theorized diagram can be found in Fig. 2. Each hypothesis relates to a potential interaction effect between perceived quality of police contact and attitudes towards the police before such encounter took place while predicting changes in attitudes after the encounter. If the interaction effect is different from zero, that means that prior levels of perceived police trustworthiness and/or legitimacy moderate the impact of contact on changes in public opinion—the effect would thus be heterogeneous, i.e. different for people with different

levels of prior attitudes. Again, we test this hypothesis in relation to trust in procedural fairness (4), trust in police effectiveness (5), and duty to obey the police (6) while disentangling contact evaluation between process (A) and outcome (B).

- *Hypothesis 4A*: homogeneous effect of process evaluation on changes in trust in procedural fairness (i.e., interaction term is zero).
- *Hypothesis 4B*: homogeneous effect of outcome evaluation on changes in trust in procedural fairness (i.e., interaction term is zero).
- *Hypothesis 5A*: homogeneous effect of process evaluation on changes in trust in police effectiveness (i.e., interaction term is zero).
- *Hypothesis 5B*: homogeneous effect of outcome evaluation on changes in trust in police effectiveness (i.e., interaction term is zero).
- *Hypothesis 6A*: homogeneous effect of process evaluation on changes in duty to obey the police (i.e., interaction term is zero).
- *Hypothesis 6B*: homogeneous effect of outcome evaluation on changes in duty to obey the police (i.e., interaction term is zero).

This Study

Data

To assess the linkages between public encounters with the police and attitudes towards legal authorities, we draw on both waves of data from *The Crime, Safety and Policing in Australia Survey* (Murphy et al. 2010a, b). In 2007, a nationally representative mail survey of adults in Australia was conducted on the extent of respondents' experiences and beliefs about crime and policing in their community. Participants were drawn from Australia's publicly available electoral roll. All electors aged 18 + in Australia are required by law to register their name and home address on the roll; the roll thus consists of a representative subject pool. Selection was stratified by State and Territory jurisdiction. 5700 residents were sent a survey booklet by mail—after several reminders and weeks, an adjusted response rate of 40% was achieved (n = 2120). Two years later, a follow-up panel survey was undertaken in 2009 aiming to examine whether attitudes and experiences of crime and policing had changed over the two-year intervening period. After a series of reminders, a total of 1190 usable responses were returned. Considering the adjusted response rate (for respondents who had died or moved address between waves 1 and 2), an attrition rate of 35% was achieved.[8]

Some 46% of the respondents in the final sample were male, 52% had post-secondary education; respondents were on average 54 years of age in 2007 and had an average self-reported household income of approximately AUD$80,000. Using the 2006 Australian

---

[8] We are assuming the dropouts to be missing approximately at random. An analysis of the dropouts including gender, age, ethnicity, income, all four indicators of perceived police fairness, all three indicators of perceived police effectiveness, and both indicators of duty to obey the police revealed no substantive attrition bias. Age is marginally associated with dropping out (every year-increase in age multiplies the odds of dropping out by about 2%), so is perceived police effectiveness (every point increase in the five-point Likert scale multiplies the odds of dropping out by approximately 20%). If anything, respondents at wave 2 were more critical about the police than respondents at wave 1.

Census data as a benchmark, we conclude that older and more educated respondents in the sample were slightly over-represented, but overall the sample was largely representative of the Australian population. For instance, 49% of the population are male, 46% had post-secondary education, and the average household income is approximately AUD$54,000.

Measures and Measurement Model

Following previous work (Bradford et al. 2009; Jackson et al. 2012) we unpack perceived trustworthiness into trust in *procedural fairness* and trust in *police effectiveness*. We also consider one part of people's judgements about the legitimacy of the police: namely, a normatively grounded sense of *duty to obey the police*. All questions were measured on a five-point Likert scale ranging from "strongly disagree" to "strongly agree" (except the indicator of perceived police effectiveness, which ranges from "very poor job" to "very good job"). The exact wording for each question asked, their assigned latent construct, and their descriptive statistics can be found in Table 1.

Unless otherwise mentioned, all measures were coded in such way that higher values indicate more positive evaluations of the construct measured. In order to assess the scaling properties and empirical distinctiveness of our measures, we use confirmatory factor analysis (CFA) with categorical (ordinal) indicators, focusing on the two components of trust and felt duty to obey the police commands. As expected, questions tap into the three theorized constructs sensibly, indicating that our empirical indicators can be empirically distinguished in the three premised dimensions. A full analysis of the empirical distinctiveness of the three latent constructs and their equivalence across waves can be found in the Appendix (A.1 and A.2, respectively).

Measuring Attitudes Towards Encounters with the Police

Most previous work on the impact of police contact on perceived trustworthiness assumed a single dimension of satisfaction with the encounter. Skogan (2006), for instance, used six questions evaluating respondents' perceived politeness, helpfulness, and fairness of police officers to create an indicator of positive versus negative encounter. In the same vein, Slocum et al. (2016) asked respondents the extent to which they were satisfied with the encounter and created an indicator with three groups—dissatisfied, neutral, or satisfied with the encounter. However, there might be more than one underlying dimension of contact evaluation, and we distinguish between respondents' perceived fairness in the procedures used in the contact and their satisfaction with the outcome's favorability (Bradford et al. 2014; Tyler and Fagan 2008).

In the wave 2 survey, respondents were asked how many times they had contact with police in the previous 12 months. Some 38% ($n = 440$) of wave 2 respondents had at least one encounter (i.e., encounters that happened at some point in between the first and the second waves of data collection)—57% of those contacts were citizen-initiated, while 43% were police-initiated (mostly involving some type of police stop). The sub-sample of respondents who did experience an encounter with the legal officials at some point in between waves 1 and 2 were further asked five follow-up questions evaluating the process and four follow-up questions evaluating the outcome favorability of such encounter—these questions can be found in Table 1.

In order to confirm that process and outcome evaluations are indeed empirically distinguishable as suggested in the procedural justice literature, we first use CFA to assess the

Table 1 Measures, constructs, and descriptive statistics at Wave 1 (t=1) and Wave 2 (t=2)

Latent construct	Survey question	Strongly disagree (1) → Strongly agree (5) or very poor job (1) → very good job (5)	
		"Mean" at t=1	"Mean" at t=2
Trust in procedural fairness	*To what extent do you agree that the police…*		
	…Treat people with dignity and respect?	3.56	3.52
	…Give people opportunity to express views before decisions are made?	3.38	3.32
	…Listen to people before making decisions?	3.45	3.38
	…Make decisions based upon facts, not their personal biases or opinions?	3.41	3.39
Trust in police effectiveness	*How good a job the police are doing at…*		
	…Solving crime?	3.35	3.48
	…Preventing crime?	3.27	3.40
	…Keeping order?	3.46	3.63
Duty to obey	*To what extent do you agree that you…*		
	…Feel a moral obligation to obey the police?	4.25	4.10
	…Overall obey the police with good will?	4.36	4.32
Police-citizen encounter: Process evaluation (n=440)	*To what extent do you feel…* (encounter between waves)		
	…You were given the opportunities to express your views before decisions were made?	3.45	
	…Your views were considered when a decision was made?	3.16	
	…You were given an honest explanation for why a certain decision was made?	3.50	
	…You understood why the police took the action they did?	3.67	
	…You were able to influence the decision made by the police?	2.73	
Police-citizen encounter: Outcome evaluation (n=440)	*To what extent…*		
	…Were you satisfied with the outcome?	3.56	
	…Was the outcome fair?	3.64	
	…Was the outcome expected?	3.71	
	…Was the outcome deserved?	3.43	

scaling properties of the nine indicators simultaneously. Considering only the 440 respondents who experienced at least one encounter with the police between waves 1 and 2, we fit two models with one and two factors and all indicators set as categorical. Despite being correlated ($r = 0.66$), the two theorized dimensions—process and outcome evaluations—seem to be empirically distinguishable given that the two-factor solution has the best model fit. We then fit a third two-factor CFA model after dropping one of the questions measuring process evaluation as it was weakly correlated with the latent construct[9]—we thus use four questions to measure process evaluation and four questions to measure outcome evaluation in all subsequent analyses. Standardized factor loadings, model fit statistics, and a full account of the measurement models can be found in the Appendix A.3.

After confirming that we can treat process and outcome evaluations as two distinct constructs, for each dimension we need to somehow classify respondents' most recent encounter with the police as positive or negative, so that their scores for trustworthiness and legitimacy can be compared with the scores of the respondents who did not have any recent contact with police. One solution for that is handpicking the 'positive' and 'negative' categories based on responses on the Likert scale. However, cutoff decisions for this formative approach are arbitrary. Instead, we adopt a data-driven approach and fit latent class models on items concerning respondents' evaluation of their most recent encounter regarding both process and outcome. This approach is preferable as it permits the modeling of unobserved heterogeneity underlying the two dimensions of contact evaluation (see Na et al. 2015; Nylund et al. 2007).

For each process evaluation and outcome evaluation, we fit three models with two, three, and four latent classes. In both cases, the three-class solution emerged as the preferred solution—see details on deciding the number of classes in the Appendix A.4. Roughly, the three classes indicate negative, neutral, and positively experienced contact with police. Our interpretation is that these classes represent encounters that went 'worse than expected' (negative), 'as expected' (neutral—note that this category includes encounters rated 'OK'), or 'better than expected' (positive). It is important to be clear what we mean here. Considering that Australia is by and large a high-trust country (see Table 1; see also Hinds and Murphy, 2007), we assume that expectations of the behavior of officials who represent key institutions in society are broadly positive. Most people expect to be treated relatively well by police officers, and for police to achieve positive outcomes more often than not. Encounters that go 'OK' are therefore experienced as 'neutral', since that is what is expected. It is only when they are *better* than expected that the experience shifts into the positive. Given this assumption, it is not surprising that the second class—the 'neutral' group, when encounters go as expected—is composed of respondents who mostly answered "agree" with the statements (as opposed most pertinently to "strongly agree" to every question posed to them). By contrast, an encounter with police wherein respondents classify most of the indicators as anything lower than the fourth point in the Likert scale (e.g., "neither agree nor disagree" with a given statement, or worse) we assume to indicate a negative (i.e., worse than expected) contact, since 'neither/nor' indicates at best uncertainty about whether police behaved in line with expectation. Mostly ticking the fifth point to answer the questions (i.e., "strongly agree") would indicate an encounter that went better than expected (i.e., positive)—see results in probability scale in Figs. 1 and 2.

---

[9] We dropped the fifth indicator of process evaluation, which asked respondents the extent to which they felt they "were able to influence the decision made by the police.".

Fig. 3 Latent classes of process evaluation. *Note*: Model estimated on M*plus* using maximum likelihood with robust standard errors. *N = 427*

Looking at the derived classes, in relation to process evaluation, 54% of the sub-sample of respondents who did have recent contact with police had 'negative' experiences, 37% had 'neutral' experiences, and 9% had 'positive' experiences. Regarding outcome favorability, 34% had 'negative' experiences, 50% had 'neutral' experiences, and 16% had 'positive' experiences (Figs. 3, 4).

Analytical Strategy

In order to assess the relationship between police-citizen encounters and public attitudes toward the police, we use a similar strategy as the one commonly found in the literature—i.e. we compare positive, neutral, and negative encounters with the group of respondents who did not experience contact with police as the baseline category. Unlike almost all previous studies, however, we now focus on *changes* in attitudes towards the police over time, and distinguish perceived quality of police behavior in encounters in terms of process and outcome. We thus fit two autoregressive structural equation models (SEM), one assessing the association between process evaluation and changes in trustworthiness and legitimacy
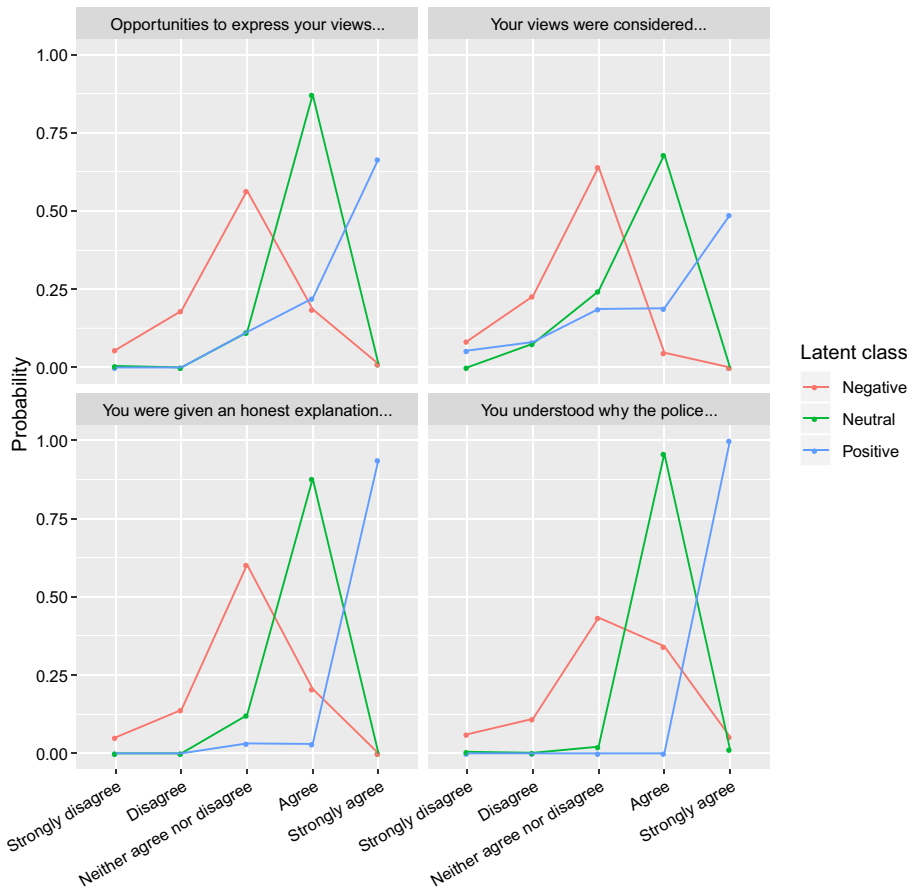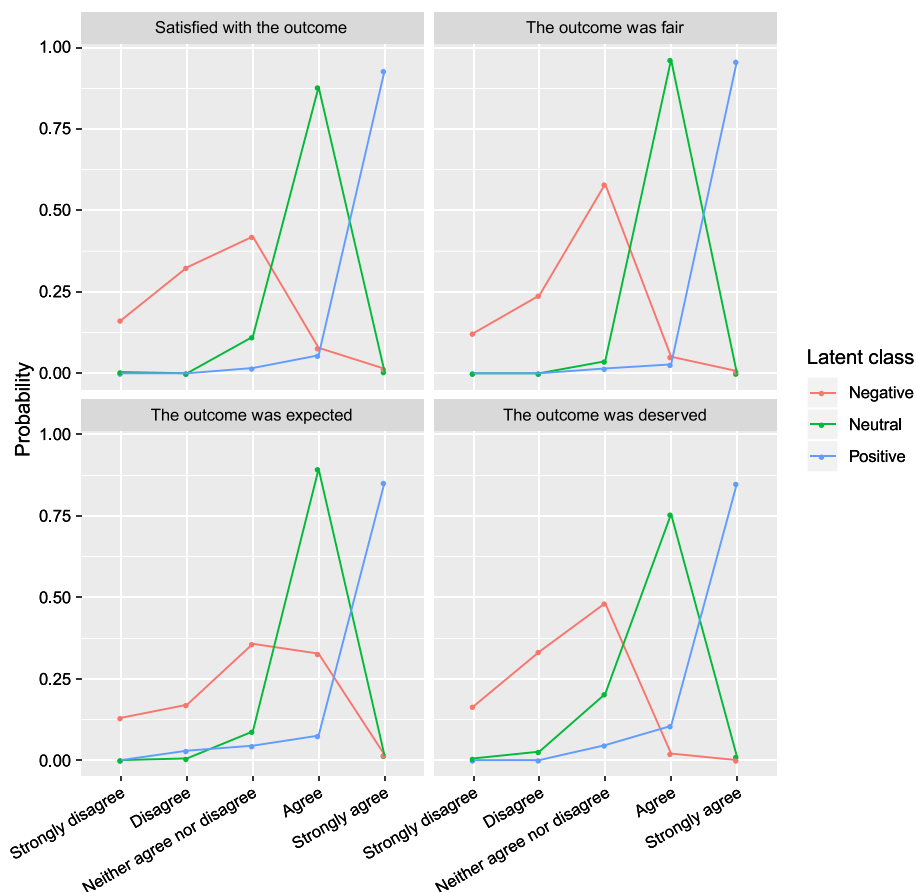
Fig. 4 Latent classes of outcome evaluation. *Note*: Model estimated on M*plus* using maximum likelihood with robust standard errors. *N = 430*

and the other between outcome evaluation and changes in trustworthiness and legitimacy.[10] This dynamic panel model permits the modeling of change in attitudes towards the police because of the inclusion of lagged dependent variables as covariates.[11] It also allows us to investigate the extent to which prior attitudes are associated with positive or negative perceptions of contact with legal officials.

---

[10] A single model including both process evaluation and outcome evaluation was too computationally intense (e.g. it did not converge). Considering that the two evaluation variables are also regressed on T1 constructs, a single model including both process evaluation and outcome evaluation would entail two multinomial logistic regressions being estimated simultaneously. For the sake of simplicity and clarity, we estimated the two models separately.

[11] The inclusion of a lagged dependent variable as a covariate allows for the modeling of change without confounding with regression towards the mean provided that the treatment is applied at some point between $t = 1$ and $t = 2$ (Allison, 1990). Even though it was not randomly assigned, the intervention we are modeling (i.e., an encounter with the police) happened between waves 1 and 2. Additionally, we follow Keele and Kelly's (2006, p. 203) advise in that, in this case, it is reasonable to theoretically assume that past levels of perceived police trustworthiness and legitimacy affect current levels of perceived police trustworthiness and legitimacy – and therefore lagged dependent variable models are a good choice.

Based on the theorized diagram shown in Fig. 1, we fit two autoregressive SEMs: (a) one with the four 'contact' groups (i.e., no contact; negative contact; neutral contact; positive contact) indicating process evaluation (testing the hypotheses 1A, 1B, and 1C) and (b) another with the four 'contact' groups indicating outcome evaluation (testing the hypotheses 2A, 2B, and 2C). In both models, all hypotheses are tested keeping the group of respondents who had no encounter with the police between waves 1 and 2 as the reference group—i.e. three dummy variables indicating negative, neutral, and positive contact are displayed. All coefficients are standardized, which allows for comparisons.

Each model includes three aspects of interest. First and foremost, arrows departing from each of three dummies indicating negative, neutral, and positive contact reflect expected changes in attitudes depending on the type of contact with police in relation to people with no contact. This is the crucial aspect of the models and is used to test hypotheses 1A, 2A, 3A, 1B, 2B, and 3B. Second, both models include a set of autoregressive parameters—the arrows departing from attitudes towards the police before an encounter to attitudes after an encounter. Those parameters speak to the stability of the variables—as psychological constructs, perceived police trustworthiness and legitimacy are expected to be highly stable over time. Finally, both models include multinomial logistic paths regressing contact evaluation on T1 measures of trustworthiness and legitimacy. This aspect of the models account for different odds of having an (un)satisfactory contact with police given different prior attitudes. For the multinomial logistic paths only, we use the 'neutral contact' group as the reference category—we are thus estimating the association between prior attitudes and the odds of having a positive or a negative encounter in comparison with a neutral encounter.[12] Both models include age at T1 (difference between 2007 and year of birth), gender (1 = *male*), and national identity (1 = *Australian non-Aboriginal*) as control variables.

Results

Estimated parameters of the panel model considering respondents' *process evaluation* can be found in Fig. 5. The model was estimated on M*plus* 7.11 using maximum likelihood with robust standard errors to handle non-normal indicators and full information maximum likelihood to handle missing data. For visual ease, measurement models and covariates are not displayed, and only paths significant at the 5% level are displayed. All displayed coefficients are standardized and therefore comparable.

As expected, all lagged values are statistically significant and yield relatively large coefficients, which speaks to the stability of such psychological constructs over time, as noted by Rosenbaum et al. (2005). Every unit increase in trust in police fairness at T1 is associated with an increase of 0.45 standard deviations in trust in police fairness at T2. Similarly, every unit increase in trust in police effectiveness at T1 is associated with an increase of 0.40 standard deviations in perceived police effectiveness at T2, and the analogous increase in duty to obey yields an increase of 0.35 at T2. This is not surprising: it means that respondents with high levels of trustworthiness and legitimacy at T1 tend to have high levels of trustworthiness and legitimacy at T2—although T2 scores are by no means determined by T1 scores. There was change over time.

---

[12] Odds of no encounter in relation to a neutral contact were also estimated as part of the model, but these are not discussed as they make no substantive sense. A table displaying all estimated coefficients can be found in Appendix A.5.
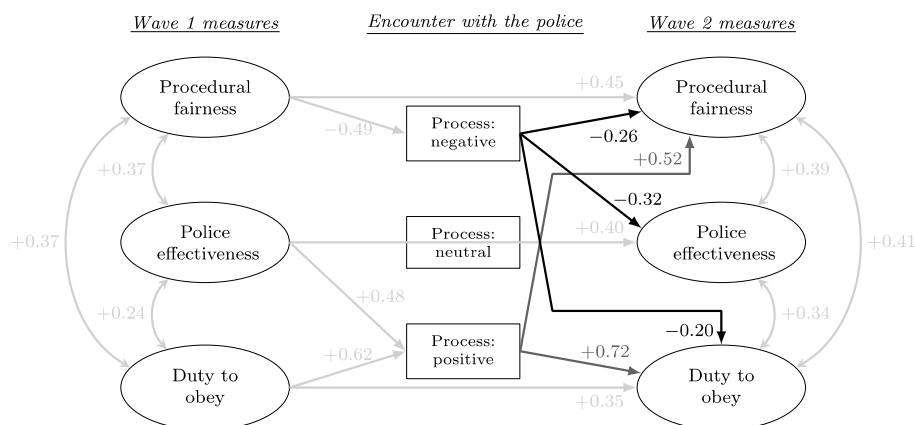
Fig. 5 Process evaluation and changes in trustworthiness and legitimacy: autoregressive structural equation model. *Note:* Estimation method (M*plus* 7.11): maximum likelihood with robust standard errors. Standardized coefficients displayed. Measurement models not displayed for visual ease. All T2 latent constructs were regressed on gender, age, and national identity. Only significant paths ($p < 0.05$) displayed for visual ease. $n = 1099$. Full model available in the Appendix (A.5)

Table 2 Assessing asymmetry: 95% confidence intervals of standardized coefficients

	Trust in procedural fairness at T2	Trust in police effectiveness at T2	Duty to obey the police at T2
Process: positive	[0.28; 0.76]	[−0.04; 0.63]	[0.47; 0.97]
Process: neutral	[−0.03; 0.26]	[−0.13; 0.15]	[−0.29; 0.02]
Process: negative	[−0.40; −0.11]	[−0.46; −0.18]	[−0.35; −0.04]
Outcome: positive	[0.08; 0.47]	[−0.02; 0.46]	[0.35; 0.81]
Outcome: neutral	[−0.06; 0.20]	[−0.11; 0.14]	[−0.30; −0.01]
Outcome: negative	[−0.55; −0.18]	[−0.70; −0.37]	[−0.47; −0.09]

95% confidence intervals of selected coefficients displayed in Fig. 5 (process) and Fig. 6 (outcome)

Results also show that the experience of an encounter with the police is associated with changes in attitudes towards legal authority. Controlling for previous levels of trustworthiness, respondents who had a positive contact experience in terms of process have scores in trust in procedural fairness 0.52 standard deviations higher on average than respondents with no contact; likewise, respondents who had a negative experience of process have scores of 0.26 lower on average. In contrast to the prediction of the asymmetry thesis, contact perceived as better than expected does more than just "cut the losses"—it is associated with an increase in trust in police fairness of a similar magnitude to the association between unsatisfactory contact and (a decrease in) trustworthiness. Table 2 below displays 95% confidence intervals of standardized coefficients, which can be helpful for comparing effect sizes and assessing the asymmetry hypothesis. Not only are both standardized coefficients significantly different from zero, but—in terms of absolute values—there is an overlap between the two confidence intervals, which indeed suggests a similar effect size albeit in opposite directions. In contrast to the prediction of hypothesis 1A, the association between process evaluation and changes in trust in procedural fairness seems to be symmetrical.

Similarly, experiencing procedurally fair encounters is associated with somewhat symmetrical changes in perceived police legitimacy. Respondents who had a positive contact encounter have an average change in duty to obey 0.72 standard deviations higher than respondents with no contact, while respondents who had a negative encounter have an average change of 0.20 standard deviations lower than those with no contact. The absolute values in both confidence intervals do not overlap, meaning that the effect size of satisfactory encounters is greater than the effect size of unsatisfactory encounters. In terms of changes in judgements about the legitimacy of the police, the impact of police-citizen encounters resembles hypothesis 3A as it appears to be asymmetrical—but in the opposite direction as originally suggested by the asymmetry thesis: positive contact is more strongly associated with changes in one's normative duty to obey the police than negative contact.

Finally, changes in trust in police effectiveness are the closest to Skogan's (2006) original results, though not as asymmetrical as originally expected. While respondents who experienced a negative encounter with the police process-wise have predicted scores of trust in police effectiveness 0.32 lower than those with no contact, having experienced a positive encounter is not associated with positive changes in trust in police effectiveness. As predicted by hypothesis 2A, the impact of police-citizen encounters is somewhat asymmetrical when it comes to changes in trust in police effectiveness. The asymmetry thesis seems to be true for changes in people's sense of trust that the police are doing a good job in solving and preventing crime and keeping order.

When it comes to process evaluation of public interactions with the police, then, the relationship between contact and trustworthiness seems very *symmetrical* when it comes to trust in procedural fairness and *asymmetrical* when it comes to trust in police effectiveness. In terms of judgements about the legitimacy of the police, the relationship seems asymmetrical, but in the opposite direction to that predicted by the asymmetry thesis: positive encounters process-wise are more strongly associated with increases in duty to obey than negative encounters are associated with decreases.

Finally, previous levels of trustworthiness and legitimacy are partly associated with the perception of fairness of an encounter. Every unit increase in trust in procedural fairness at T1 is associated with a decrease in the odds of having a negative rather than a neutral encounter by 39% ($\hat{\beta} = -0.49$, thus an odds ratio of 0.61). Similarly, every unit increase of duty to obey at T1 multiplies the odds of having a positive rather than neutral encounter by 86% ($\hat{\beta} = 0.62$, thus an odds ratio of 1.86). Finally, every unit-increase of trust in police effectiveness at T1 multiplies the odds of having a positive rather neutral encounter by 61% ($\hat{\beta} = 0.48$, thus an odds ratio of 1.61).

Figure 6 shows the results of the second panel model, now focusing on *outcome evaluation*. As expected, some of the relationships remain virtually unaltered. All three attitude constructs (i.e. procedural fairness, police effectiveness, and duty to obey the police) are quite stable over time, with regression coefficients for the lagged dependent variables being relatively high. Previous attitudes towards the police are also partly associated with how respondents perceive an encounter in terms of its outcome. The more people feel a sense of duty to obey the police, the more likely it is that they perceive the outcome of an encounter as positive rather than neutral ($\hat{\beta} = +0.55$, thus an odds ratio of 1.73); and every unit increase in trust in police effectiveness at T1 is associated with a decrease in the odds of having a negative rather than a neutral encounter by 39% ($\hat{\beta} = -0.4\,9$, thus an odds ratio of 0.61).

Turning to the association between contact and changes in trustworthiness and legitimacy, results indicate similarities in comparison with the first model in Fig. 5. Not only is
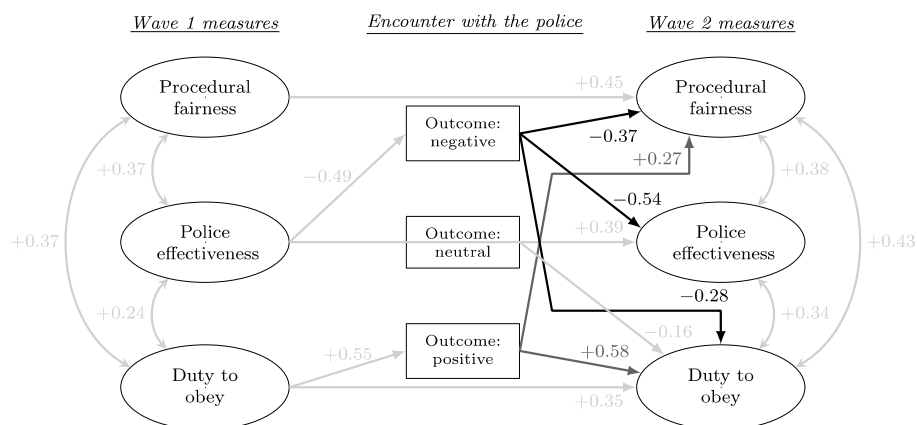
Fig. 6 Outcome evaluation and changes in trustworthiness and legitimacy: autoregressive structural equation model. *Note:* Estimation method (M*plus* 7.11): maximum likelihood with robust standard errors. Standardized coefficients displayed. Measurement models not displayed for visual ease. All T2 latent constructs were regressed on gender, age, and national identity. Only significant paths ($p < 0.05$) displayed for visual ease. $n = 1102$. Full model available in the Appendix (A.5)

negative contact associated with decreases in trust in procedural fairness ($\hat{\beta} = -0.37$), but positive contact is also associated with increases ($\hat{\beta} = +0.27$). The comparison of effect sizes based on the overlap of absolute values in confidence intervals suggests similar influences from negative and positive contact. *Contra* hypothesis 1B, the impact of outcome evaluation on changes in trust in procedural fairness seems to be symmetrical.

In terms of changes in trust in police effectiveness, the relationship is as asymmetrical as expected (as per hypothesis 2B): while experiencing a 'bad' contact is associated with a decrease in trust of 0.54 standard deviations, experiencing positive contact is not associated with changes in trust in police effectiveness. Again, in terms of expected effectiveness of the police the relationship between outcome favorability of encounters and trustworthiness is as asymmetrical as Skogan's (2006) original study.

Finally, results indicate outcome favorability is strongly associated with changes in judgements about the legitimacy of the police: respondents who experienced an encounter that went better than expected have an average increase in their scores of duty to obey of 0.58 standard deviations, while those who experienced contact that went 'as expected' (i.e., neutral) have an average decrease in their scores of duty to obey of 0.16 standard deviations. Finally, those who experienced contact that went worse than expected have an average decrease of 0.28. As hypothesis 3B predicted, the relationship between outcome evaluation and changes in perceived police legitimacy is asymmetrical, however in the opposite direction expected—positive contact is more strongly associated with positive changes than negative contact is associated with negative changes.

Together these results show that contact matters. Even considering how stable in time psychological constructs such as trustworthiness and legitimacy are, and taking prior attitudes into account, people's perception of how the police handle an interaction is associated with attitudinal changes. Experiencing procedural fairness is associated with higher values of trustworthiness and legitimacy over time, while experiencing unfairness is associated with lower values. Hence, by: (a) analyzing panel data to account for changes in attitudes as suggested by Skogan (2012) and Tyler and Fagan (2008); (b) unpacking police

trustworthiness into different dimensions of trust in procedural fairness and police effectiveness and including measures of police legitimacy as suggested by Bradford et al. (2009) and Jackson et al. (2012); (c) considering process and outcome as two different dimensions of contact evaluation as suggested by Tyler and Fagan (2008) and Bradford et al. (2014); and (d) adopting a more appropriate measurement model to account for an unobserved heterogeneity of contact evaluation wherein three rather than two categories emerge—we find some quite strongly *symmetrical* relationships between police-citizen contact and attitudes towards the police.

Interestingly, prior levels of trust in procedural fairness are associated with how one experiences the process of an interaction with the police, whereas prior levels of trust in police effectiveness and duty to obey the police are associated with how one assesses both the outcome and the process of an interaction. Such associations could challenge our claims that there could be an impact of police-citizen encounters on changes in trustworthiness and legitimacy. In order to investigate this more deeply, we estimated three further statistical models assessing the extent to which prior attitudes towards the police moderate the association between police-citizen encounters and changes in trustworthiness and legitimacy.

Prior Attitudes and the Impact of Police-Citizen Encounters

Skogan (2012) says that people bring 'priors' to bear when they experience contact with the police which "could independently color how they view specific features of an encounter'' (p. 276—see also Jackson and Pósch 2019; Rosenbaum et al. 2005; Sargeant et al. 2018). Although controlling for prior levels of trustworthiness and legitimacy, results displayed in Figs. 5 and 6 do not rule out the possibility that the impact of encounters is different for citizens with different levels of trust and legitimacy before the interaction. Prior attitudes towards legal authority might play an important role in conditioning how fairness is perceived. It could be the case, for instance, that the impact of police-citizen encounters on changes in trustworthiness and legitimacy are actually *moderated* by citizens' prior attitudes.

To properly assess the extent to which prior attitudes moderate the association between contact and attitudinal changes and test the hypotheses displayed in Fig. 2, we concentrate on the sub-sample of respondents who experienced contact with police between waves 1 and 2. An appropriate strategy for this assessment involves fitting statistical models with an interaction term between constructs at T1 and contact evaluation. The empirical strategy of interacting lagged outcome with a treatment variable is particularly common in the context of lagged dependent variable models (Vickers and Altman 2001). Given that we are dealing with latent constructs, we use latent moderated structural modeling (LMS) to analyze how 'priors' that individuals bring when interacting with the police condition the association between encounters and changes in trustworthiness and legitimacy—LMS models allow for interactions between two latent variables. Our analytic strategy involves fitting three separate models: we first interact respondents' scores of trust in procedural fairness at T1 with evaluations regarding both process and outcome concerns (hypotheses 3A and 3B); we then do the same with trust in police effectiveness at T1 (hypotheses 4A and 4B); and finally with duty to obey at T1 (hypotheses 5A and 5B). We can thus evaluate the impact of police-citizen contact on changes in trustworthiness and legitimacy across different levels

of prior attitudes and assess whether the association is independent of the 'priors' people bring when interacting with police.

Estimation Strategy

We use LMS to estimate interaction effects between latent variables in one step using maximum likelihood (Klein and Moosbrugger 2000; Muthén and Asparouhov 2012). By design, the means of all latent variables are constrained to be zero. Therefore, for an interaction term between η and ξ, the main effect of η should be interpreted as the statistical effect of η at an average value of ξ. To make sure that all latent constructs reflect what they are supposed to reflect, we use a two-step approach whereby we first estimate the measurement model and then plug-in the estimated factor loadings in an LMS estimation (this procedure is similar in spirit to what is suggest by Bakk and Kuha 2018 in the context of latent class analysis). We fit three two-step LMS models with full information maximum likelihood to handle missing data assessing the moderating role of prior attitudes: model 1 focuses on trust in procedural fairness, model 2 on changes in trust in police effectiveness, and model 3 on changes in duty to obey.

Results

Results of three LMS models fitted on M*plus* 7.11 can be found in Figs. 7, 8, and 9. For visual ease, only the structural part of the model was included in the figures; all models control for age, gender, and national identity, but likewise these paths are not displayed. Non-significant coefficients at the 5% level are represented by dashed arrows.

Figure 7 shows the results of the first model, testing whether prior levels of trust in procedural fairness moderate the association between process and outcome evaluations and changes in trust in procedural fairness. At an average level of trust in procedural fairness at T1, it is noticeable that while process evaluation is associated with changes in trust in procedural fairness ($\hat{\beta} = 0.37$), outcome evaluation has no statistical effect—most likely due to the fact that we are now solely analyzing respondents who did experience contact with police rather than comparing with respondents with no contact.

The focus, however, should be on the interaction terms. The most important finding is their lack of significance, which suggests that the statistical effect of process evaluation on trust in procedural fairness at T2 does not vary by levels of trust in procedural fairness at T1. As predicted by hypothesis 4A, this statistical effect is homogeneous. The association is on average the same for all respondents regardless of their previous levels of trust in police fairness. Inasmuch as previous attitudes towards the police potentially influence people's experiences when interacting with the police, the subsequent impact of such contact—in terms of fairness in the procedures—is homogeneous.

The same conclusion is true for outcome evaluation, as per hypothesis 4B. This is unsurprising given that, in this subgroup analysis, we found no evidence even of a main effect: considering only the sub-sample of respondents who did experience contact with police, the statistical effect of outcome evaluation on changes in trust in procedural fairness (at an average level of trust in procedural fairness at T1) is homogeneously zero. However, outcome evaluation is particularly central when the focus of the analysis is on changes in trust in police effectiveness—Fig. 8 shows the results of the second LMS model.

Fig. 7 Heterogeneity effects based on prior levels of trust in procedural fairness: latent moderated structural model. *Note:* Estimation method (M*plus* 7.11): maximum likelihood with robust standard errors. Gender, age, and national identity included as covariates. Measurement models and covariates not displayed for visual ease. All represented paths statistically significant ($p < 0.05$). Non-significant paths represented by dashed arrows. $n = 429$. Covariance between process and outcome evaluations is $\widehat{cov} = 0.68$. Full model available in the Appendix (A.6)

First, note that the exact opposite associations are found now—in this subgroup analysis we find no evidence of an association with process evaluation, but at an average level of trust in police effectiveness at T1 outcome evaluation does have an association with changes in attitudes ($\hat{\beta} = 0.27$). The most important aspect of Fig. 8, however, is that it provides evidence for an interaction effect. In terms of outcome evaluation, the impact of police-citizen encounters does not seem to be homogeneous: the statistical effect is different depending on previous levels of trust in police effectiveness (at T1). Unlike our prediction in hypothesis 5B, the interaction term is negative ($\hat{\beta} = -0.13$), which means that the impact of police-citizen contact on trust in police effectiveness is lower among respondents with *higher* prior levels of trust in police effectiveness. The more one expects the police to be effective, the less outcome evaluation seems to make a difference—alternatively, the impact of contact is stronger among respondents with lower levels of trust in police effectiveness.

Finally, Fig. 9 shows the results of the third LMS model. In terms of perceived police legitimacy, only outcome evaluation is associated with changes in duty to obey ($\hat{\beta} = 0.17$) at an average level of duty to obey the police at T1. Crucially, the model indicates little evidence of heterogeneity in the association. The fact that both interaction terms are virtually zero suggests that the impacts of both process and outcome evaluations on changes in one's normative duty to obey the police are the same regardless of people's prior levels of perceived police legitimacy, as predicted by hypotheses 6A and 6B.
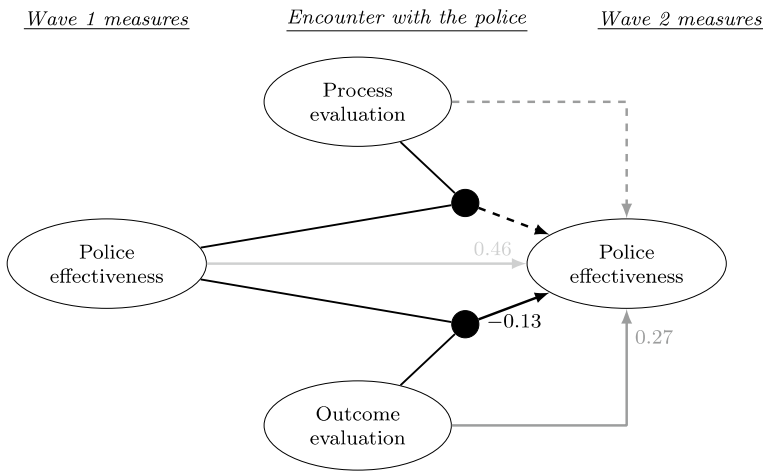
Fig. 8 Heterogeneity effects based on prior levels of trust in police effectiveness: latent moderated structural model. *Note:* Estimation method (M*plus* 7.11): maximum likelihood with robust standard errors. Gender, age, and national identity included as covariates. Measurement models and covariates not displayed for visual ease. All represented paths statistically significant ($p < 0.05$). Non-significant paths represented by dashed arrows. $n = 429$. Covariance between process and outcome evaluations is $\widehat{cov} = 0.68$. Full model available in the Appendix (A.6)
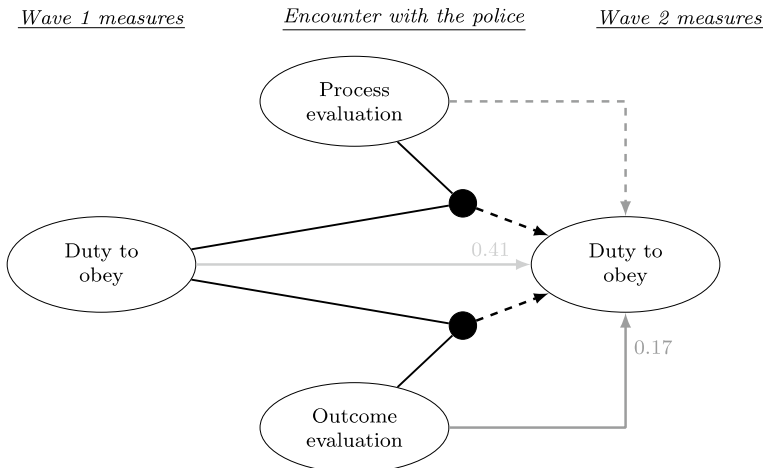
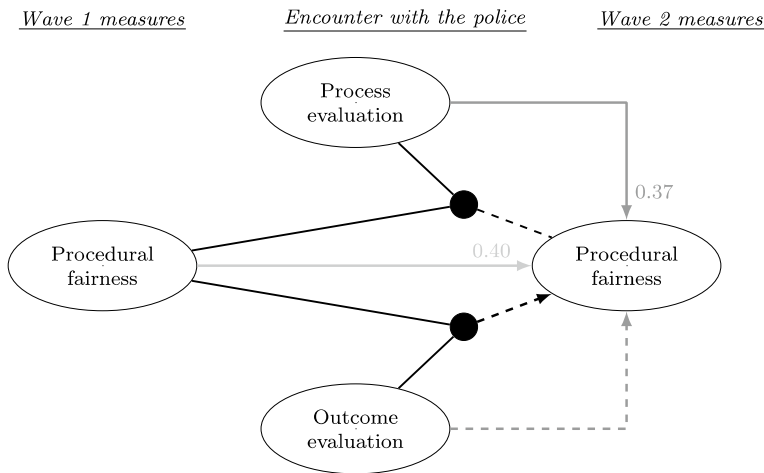**Fig. 9** Heterogeneity effects based on prior levels of duty to obey: latent moderated structural model. *Note:* Estimation method (M*plus* 7.11): maximum likelihood with robust standard errors.. Gender, age, and national identity included as covariates. Measurement models and covariates not displayed for visual ease. All represented paths statistically significant ($p < 0.05$). Non-significant paths represented by dashed arrows. $n = 429$. Covariance between process and outcome evaluations is $\widehat{cov} = 0.68$. Full model available in the Appendix (A.6)

Discussion

Criminologists have long studied the link between police-citizen encounters and attitudes towards the police. People want decisions to be made in fair ways, especially for invasive police stops where one potential outcome is arrest and entry into the criminal justice system. People also want their concerns to be taken seriously and they want information to be provided when and where relevant. Contact can also be status-challenging and status-reinforcing: the police protect the boundaries of inclusion and exclusion (Waddington 1999) and officer contact contains status-relevant information concerning the citizen—about the moral worth that the officer assigns to them, as well as their position within the social groups the police both represent and partially define. Positive encounters may help to confirm an individual's social standing, while negative encounters may help to undermine this status, resulting in resentment and consequently damaging opinions of the police.

In this paper we considered the idea that the police cannot enhance public trustworthiness and legitimacy through their interactions with the public, they can only damage public opinion. Skogan's (2006) asymmetry thesis posits that people who experience a negative encounter with the police will have lower, on average, opinions of police compared to people who did not experience an encounter, while those who experience a positive encounter with the police will at best have only slightly higher opinions, on average, compared to people who did not experience an encounter. We approached the issue using two-wave panel data and an empirical strategy that models change over time. This involved comparisons between four groups: (a) no contact between waves 1 and 2; (b) contact that went worse than expected (i.e., negative); (c) contact that went as expected (i.e., neutral); and (d) contact that went better than expected (i.e., positive). Autoregressive SEM allowed us to perform what is, to our knowledge, the first panel analysis test of the asymmetry thesis that has considered both trust, as a multi-dimensional construct, and legitimacy. As well as drawing on longitudinal data to empirically test the asymmetry thesis of police-citizen contact, we built on recent advances in the literature and unpacked attitudes towards the police in terms of legitimacy and trustworthiness as separate constructs (Jackson and Gau 2015)—we also distinguished between trustworthiness as perceived police fairness *and* perceived police effectiveness (Bradford et al. 2009). Moreover, we built on previous work and differentiated between process and outcome evaluations in encounters with the police (Tyler and Fagan 2008). Finally, we extended prior research and developed a new measurement model of contact evaluation that took into account people's expectations about the encounter to consider 'positive' and 'negative' contact in relation to what is expected.

This set of methodological and substantive advances may have made a difference. On the one hand, the results are relatively close to Skogan's (2006) original thesis when it comes it changes in trust in police *effectiveness*. While we found some symmetry in the association between police-citizen encounters and changes in expectations that the police are effective in delivering their job, negative experiences during contact with police—both in terms of process and outcome—seem to damage trust in police effectiveness to a greater extent than positive experiences seem to boost it. While policing policy might aim for more than just 'cutting losses,' in terms of trust in police effectiveness the relationship between contact and trust does seem to be asymmetrical.

On the other hand, the relationship between police-citizen encounters and changes in trust in *procedural fairness* does *not* appear to be as asymmetrical as previously thought. Indeed our results indicate a very symmetrical relationship. Our study suggests that satisfactory encounters could do more than just prevent damages in public trustworthiness in

policing: they could potentially improve trust in police. Results are even more striking in terms of changes in duty to obey the police. If anything, the relationship is asymmetrical in the opposite direction: positive contact boosts changes in perceived police legitimacy to a much greater extent than negative contact damages it.

Our findings are therefore significant for the procedural justice field. Procedural justice research was from the beginning based on a symmetry model, whereby authorities could rely on good practice to build their legitimacy (Tyler 1990). Findings from studies testing the 'asymmetry thesis' seemed to imply that good practice would be pointless; concerns were raised that good practice would make little to no difference in gains to legitimacy. Our findings stand in contrast to such concerns and once again highlight the importance of police being both fair and effective. Policing policy should consider that police-citizen encounters do seem to be teachable moments where citizens infer from the behavior of individual police officers the behavior of police in general and update their recognition of legal authority as a rightful authority. Instead of 'cutting their losses', police-citizen interactions could be the base for policy aiming for enhancing perceived police legitimacy.

In order to investigate the relations between police-citizen encounters and changes in trustworthiness and legitimacy more deeply, a second set of analyses was employed. Drawing on the hypothesis that prior attitudes towards legal institutions might influence one's perception of contact with legal authorities, we removed from the analysis respondents who had had no contact with the police between waves 1 and 2 and focused on estimating change over time using a statistical model that allows for the test of heterogeneity in the effects of police-citizen contact (latent moderated structural modeling)—it was possible to assess the extent to which prior attitudes moderate the association between police-citizen encounters and changes in trustworthiness and legitimacy.

This set of analyses included interaction terms between each psychological construct at T1 (i.e., trust in procedural fairness, trust in police effectiveness, and duty to obey the police) and evaluations about the most recent encounter (both for process and outcome) as predictors of the relevant T2 constructs. In terms of trust in police fairness, only process evaluation is associated with change, and there is no evidence of heterogeneity. The statistical effects of contact on changes in trust in police procedural fairness are the same regardless of previous levels of trustworthiness. Contrariwise, in terms of trust in police effectiveness, only outcome evaluation is associated with change. However, we found evidence for heterogeneity—in the opposite direction as originally expected: outcome evaluation is most associated with changes in trust in police effectiveness for people with *lower* prior levels of trust in police effectiveness. Finally, in terms of perceived police legitimacy, satisfaction with both process and outcome are associated with changes in duty to obey, but we found little evidence of heterogeneity here: police-citizen encounters seem to enhance perceived police legitimacy regardless of people's prior attitudes towards legal authority.

Overall, our results indicate that the influence of police-citizen encounters on attitudes towards the police can be distinguished between the assessments of process fairness and outcome favorability. It seems that when citizens perceive an encounter to be procedurally fair, they will increase their levels of trust in police fairness and duty to obey. When they perceive an encounter to end favorably, they may increase their levels of trust in police effectiveness—depending on the extent to which they believed the police to be trustworthy in fighting crime before contact—and duty to obey.

Limitations should, of course, be acknowledged. First, there could be omitted variable bias, and we are not engaging in causal inference as we did not randomly assign respondents to satisfactory and unsatisfactory encounters. Nor are we claiming any particular identification strategy. More field and laboratory experiments and other quasi-experimental

designs that permit the identification of causal effects are needed in this area. Second, it would have been helpful to have more than two waves of data. With three waves of data, for instance, we could test whether the statistical impact of police-citizen encounters is the same at different moments in time, which would clarify the mechanisms of such impact, as well as include random intercepts to properly account for within- and between-individual changes (Hamaker et al. 2015). Third, the findings only pertain to Australia, which can be considered a somewhat specific context. Both attitudes towards the police and perceptions of police-citizen encounters are overall very positive in Australia, which could partly explain the results we found. Perhaps the impact of contact on changes in trustworthiness and legitimacy is as asymmetrical as previously thought in contexts where police confrontations with the public are more common; we would welcome panel studies in other contexts so as to evaluate the dynamics of the relationship between police-citizen encounters and public attitudes towards the police.

Conclusion

To close, our findings have positive implications for policing policy and practice. While we cannot engage in causal inference, it seems there is a robust relationship between positively experienced police-citizen contact and positive changes in public opinion. When citizens perceive police officers to be treating them with dignity and respect, making clear and fair decisions, explaining the reasons for every decision, listening to what they have to say, both the belief that the police are trustworthy and public judgements about the legitimacy of the police increase.

Public support is essential for the good functioning of the criminal justice system—the police, in particular, rely on public confidence to function effectively (Jackson et al. 2020). Without public support, police work is costly, difficult, and to some extent ineffective. Boosting positive attitudes towards legal institutions is therefore crucial for policy and practice. What we show in this paper is that interactions between citizens and legal officials do seem to be an important source both for boosting and damaging public attitudes towards legal authorities in a symmetrical fashion.

Consistent with Skogan's (2006) asymmetry thesis, it seems like the positive statistical effect of 'good' contact is slightly weaker in magnitude than the equivalent negative statistical effect of 'bad' contact—but only when it comes to changes in trust in police effectiveness. In terms of changes in trust in police fairness and duty to obey, our findings paint a 'good news' story, at least in terms of the police's ability to improve public trust through their interactions with citizens. It seems that procedural fairness during interactions with the public really can enhance trustworthiness and legitimacy.

Appendix 1: Measuring Public Attitudes Towards the Police: Empirical Distinctiveness Between Latent Constructs

We use confirmatory factor analysis (CFA) to assess the scaling properties of our measures, focusing on the two components of perceived police trustworthiness (trust in procedural fairness and trust in police effectiveness) and one of the components of police legitimacy (a normative duty to obey the police). All indicators are set as categorical (ordinal) and the models are estimated using diagonally weighted least squares. In order to assess the empirical distinctiveness of the three theorized constructs, we estimate three models with one, two, and three factors using only first wave data and compare their fit statistics.

Model fit statistics for the three estimated models can be found in Table 3. The one-factor model tests whether all these indicators could actually be reflecting one overall construct representing some sort of normative compass of attitudes towards the police. The two-factor model tests whether legitimacy and trustworthiness are distinguished

Table 3 Model fit statistics for CFA models with one, two, and three factors

Model fit statistics	One-factor	Two-factor	Three-factor
χ^2 (df)	3031.95 (27)	1695.56 (26)	143.98 (24)
p value	$p < 0.001$	$p < 0.001$	$p < 0.001$
RMSEA	0.326 [0.317; 0.336]	0.248 [0.238; 0.258]	0.069 [0.058; 0.080]
CFI	0.906	0.948	0.996
TLI	0.875	0.928	0.994

CFA models estimated on R's package *lavaan* using diagonally weighted least squares. All indicators set as categorical (ordinal). All factors were allowed to correlate. Estimation method: weighted least squares. n = 1045

Table 4 Standardized factor loadings for three-factor CFA model

Latent variable/indicators	Estimates	SE	*p* value
Trust in procedural fairness			
Police treat people with dignity and respect	0.773	0.016	< 0.001
Police give people opportunity to express views	0.892	0.010	< 0.001
Police listen before making decisions	0.914	0.010	< 0.001
Police make decisions upon facts	0.730	0.018	< 0.001
Trust in police effectiveness			
Police are good at solving crime	0.836	0.013	< 0.001
Police are good at preventing crime	0.914	0.010	< 0.001
Police are good at keeping order	0.912	0.010	< 0.001
Duty to obey the police			
Feel a moral obligation to obey the police	0.916	0.029	< 0.001
Obey the police with good will	0.877	0.027	< 0.001
Covariance Procedural Justice & Effectiveness	0.490	0.026	< 0.001
Covariance Procedural Justice & Duty to obey	0.469	0.030	< 0.001
Covariance Duty to obey & Effectiveness	0.306	0.035	< 0.001

CFA models estimated on R's package *lavaan* using weighted least squares. All indicators set as categorical (ordinal). Estimation method: weighted least squares. n = 1045

from one another, but with no further empirical distinction between trust in procedural fairness and trust in police effectiveness within the trustworthiness construct. Finally, the three-factor model tests whether items tapping into the latent constructs that we name 'trust in procedural fairness, 'trust in police effectiveness', and 'duty to obey the police' are empirically distinguishable as theoretically predicted.

Multivariate models like this do not signal whether indicators actually measure constructs as this is a purely theoretical claim (Jackson and Kuha 2016), but they can suggest how well each indicator taps into the theorized constructs. Accordingly, results of Table 3 clearly show that a three-factor model is preferred over the one- and two-factor solutions. The three-factor model is the only one with acceptable fit (RMSEA = [0.058; 0.080], CFI = 0.996, TLI = 0.994; the $\chi 2$ test tends to be sensitive to sample size). Results speak to the empirical distinctiveness between items loading onto trust in procedural fairness, trust in police effectiveness, and duty to obey the police. Standardized factor loadings of the three-factor solution can be found in Table 4.

Appendix 2: Measuring Public Attitudes Towards the Police: Measurement Equivalence of Latent Constructs

In order to establish measurement equivalence of latent constructs over time, for each latent construct we fit four two-factor confirmatory factor analysis (considering the latent construct at T1 and T2). The first model (configural equivalence) freely estimates all parameters, with residuals of the same indicators at different time points being allowed to correlate. The second model (weak equivalence) constrains the factor loadings to be the same across time, with residuals of the same indicators at different time points being allowed to correlate. The third model (strong equivalence) constrains both the factor loadings and the intercepts to be the same across time, with residuals of the same indicators at different time points being allowed to correlate. The fourth model (strict equivalence) constraints the factor loadings, the intercepts, and the residuals to be the same across time. We then compare the model fit statistics and perform three likelihood ratio tests to assess whether each further constraint improves upon the less restrictive model.

We perform this test separately for trust in procedural fairness and trust in police effectiveness. Given that there are only two indicators of duty to obey, it is not possible to assess the measurement equivalence for this latent construct. Results of the tests can be found in Table 5.

Appendix 3: Measuring Evaluations of Encounters with the Police: Empirical Distinctiveness Between Latent Constructs

In terms of citizens' evaluations of their most recent encounter with the police that happened at some point between the wave 1 and 2 surveys, nine questions were asked—five tapping into process concerns and four tapping into outcome concerns. Standardized factor loadings and model fit statistics of three CFA models with one, two, and two factors can be found in Table 6. The first model assumes that all nine indicators tap into one single latent construct—something like a general index of satisfaction with contact. The second model assumes that process evaluation and outcome evaluation are two, albeit correlated, separate

Table 5 Assessing the measurement equivalence of latent constructs

	Configural	Weak	Strong	Strict
Trust in procedural fairness				
χ^2	237.948	240.870	242.730	242.730
LR Test	–	$p=0.404$	$p=0.761$	$p<0.001$
RMSEA	0.112	0.102	0.092	0.092
CFI	0.952	0.952	0.952	0.952
TLI	0.910	0.925	0.940	0.940
AIC	16,952.981	16,949.903	16,943.763	16,943.763
BIC	17,100.277	17,081.962	17,055.505	17,055.505
Trust in police effectiveness				
χ^2	16.442	33.404	42.698	46.345
LR Test	–	$p<0.001$	$p=0.025$	$p=0.302$
RMSEA	0.044	0.056	0.052	0.046
CFI	0.997	0.993	0.991	0.991
TLI	0.990	0.984	0.986	0.989
AIC	10,858.698	10,871.659	10,874.953	10,872.600
BIC	10,970.548	10,973.260	10,961.314	10,943.721

CFA models estimated on R's package *lavaan* using full information maximum likelihood. n = 1190

dimensions of one's attitudes towards their most recent encounter with the police. Finally, the third model has the same assumptions as in the second model but removes one of the indicators which has a low factor loading in the first and second models.

Model fit statistics indicate the two-factor solution as a better-fitted model,[13] signaling that the indicators do seem to be empirically distinguishable as the two theorized dimensions of evaluations about the encounter. Interestingly, albeit demonstrating some empirical distinctiveness between satisfaction with process and satisfaction with outcome, these dimensions are strongly correlated with each other (cov(η_1, η_2)=0.64). The fifth indicator of perceived fairness ("You feel you were able to influence the decision made by the police") is poorly correlated with its relevant latent construct ($\lambda^*_{51} = 0.662$), so a third model was fitted without this question. While all parameters remained virtually unaltered, model fit statistics demonstrate an improvement. The two separate dimensions of satisfaction with contact with four empirical indicators each were used in subsequent models.

---

[13] The relatively high RMSEA is due to small degrees of freedom (df), when the RMSEA often falsely indicates a poor fitting model (Kenny et al., 2014). We accept the model fit based on the CFI and TLI values.

Table 6 CFA models: satisfaction with most recent encounter with the police

Survey indicators	One-factor	Two-factor	Two-factor
Process evaluation	(Standardized factor loadings)		
Given the opportunities to express your views…	0.692	0.764	0.775
Views were considered when a decision was made…	0.723	0.802	0.706
Given an honest explanation…	0.758	0.819	0.841
Understood why the police took the action they did…	0.771	0.858	0.887
Able to influence the decision made by the police…	0.586	0.662	–
Outcome evaluation			
Satisfied with the outcome	0.924	0.938	0.936
The outcome was fair	0.959	0.970	0.970
The outcome was expected	0.745	0.782	0.785
The outcome was deserved	0.896	0.913	0.915
Covariance Process & Outcome	–	0.641	0.659
	Model fit statistics		
$\chi^2(df)$	997.99 (27)	360.52 (26)	150.14 (19)
p-value	< 0.001	< 0.001	< 0.001
RMSEA	0.297	0.178	0.130
RMSEA CI	[0.281; 0.313]	[0.162; 0.194]	[0.111; 0.145]
CFI	0.970	0.989	0.996
TLI	0.960	0.986	0.994

CFA models estimated on R's package *lavaan* using diagonally weighted least squares. All indicators set as categorical. Estimation method: weighted least squares. n = 410

Appendix 4: Measuring Evaluations of Encounters with the Police: Latent Class Analysis

With the goal of classifying respondents' encounters with the police as positive or negative but without handpicking how to define the categories 'positive' and 'negative', we use latent class analysis to assess the underlying structure of people's contact evaluation. For each dimension—process and outcome—we fit latent class models with two, three, and four latent classes and compare their fit statistics. Results of such model fit comparison can be found in Table 7. Considering that the number of classes is usually decided in terms of their information criteria, entropy, and substantive contribution (Nylund et al. 2007), a three-class solution is the one with the best performance both for process and outcome evaluations.

Originally, we were hoping to find two latent classes for each process and outcome—roughly, a group of respondents who thought the encounter was positive and another who thought the encounter was negative. However, information shown in Table 7 makes it clear that the two-class solution does not have an appropriate fit: in both cases, it has the highest BIC and AIC and lowest entropy levels. For satisfaction with outcome favorability, the three-class solution clearly has the best fit (lowest AIC and BIC, highest entropy). When it

Table 7 LCA models for satisfaction with process and outcome

Model	BIC	AIC	Entropy
Process evaluation			
Two-class	3935.60	3801.73	0.796
Three-class	3724.07	3521.23	0.879
Four-class	3637.67	3365.87	0.876
Outcome evaluation			
Two-class	4004.40	3866.30	0.920
Three-class	3466.60	3262.32	0.953
Four-class	3569.60	3297.32	0.714

Latent Class models estimated on M*plus* 7.11. n = 427; n = 430

comes to process evaluation, there are some mixed signals: the three-class solution has a higher entropy, but the four-class solution has lower BIC and AIC levels.

Nylund et al. (2007) suggest that substantive contributions are equally, if not more important when deciding on the number of latent classes. Despite some mixed signals from the model fit comparison, from a substantive perspective a three-class solution is more appropriate than a four-class. We therefore adopt three latent classes both for process evaluation and outcome evaluation—which indicate encounters that went negative (i.e., worse than expected), neutral (i.e., as expected), or positive (i.e., better than expected).

Appendix 5: Autoregressive Structural Equation Modeling: Full Models

See Table 8.

Table 8 Autoregressive structural equation models as presented in Figs. 5 and 6

Measurement	Model 1 (process)				Model 2(outcome)			
	Est.	SE	p	Std.	Est.	SE	p	Std.
Trust in procedural fairness T1								
Dignity and respect t	0.428	0.019	<0.001	0.428	0.430	0.018	<0.001	0.430
Opportunity to express views	0.598	0.017	<0.001	0.598	0.598	0.018	<0.001	0.598
Listen before making decisions	0.620	0.017	<0.001	0.620	0.620	0.018	<0.001	0.620
Decisions upon facts	0.448	0.020	<0.001	0.448	0.451	0.019	<0.001	0.451
Trust in procedural fairness T2								
Dignity and respect t Opportunity to express views Listen before making decisions Decisions upon facts	0.428	0.019	<0.001	0.487	0.430	0.018	<0.001	0.490
Opportunity to express views	0.598	0.017	<0.001	0.680	0.598	0.018	<0.001	0.682
Listen before making decisions Decisions upon facts	0.620	0.017	<0.001	0.705	0.620	0.018	<0.001	0.707
Decisions upon facts	0.448	0.020	<0.001	0.510	0.451	0.019	<0.001	0.514
Trust in police effectiveness T1								
Solving crime	0.464	0.015	<0.001	0.464	0.462	0.015	<0.001	0.462
Preventing crime	0.599	0.016	<0.001	0.599	0.596	0.016	<0.001	0.596
Keeping order	0.530	0.016	<0.001	0.530	0.526	0.017	<0.001	0.526
Trust in police effectiveness T2								
Solving crime	0.464	0.015	<0.001	0.518	0.462	0.015	<0.001	0.519
Preventing crime	0.599	0.016	<0.001	0.668	0.596	0.016	<0.001	0.669
Keeping order	0.530	0.016	<0.001	0.591	0.526	0.017	<0.001	0.590
Duty to obey T1								
Moral obligation	0.545	0.025	<0.001	0.545	0.548	0.025	<0.001	0.548
Obey with good will	0.426	0.020	<0.001	0.426	0.419	0.019	<0.001	0.419
Duty to obey T2								
Moral obligation	0.545	0.025	<0.001	0.593	0.548	0.025	<0.001	0.599

Table 8 (continued)

Measurement	Model 1 (process)				Model 2 (outcome)			
	Est.	SE	p	Std.	Est.	SE	p	Std.
Obey with good will	0.426	0.020	<0.001	0.463	0.419	0.019	<0.001	0.457
Structural								
Trust in procedural fairness T2								
Trust in procedural fairness T1	0.507	0.035	<0.001	0.446	0.514	0.034	<0.001	0.451
Process: positive	0.587	0.140	<0.001	0.517				
Process: neutral	0.130	0.084	0.121	0.114				
Process: negative	−0.292	0.085	0.001	−0.256				
Outcome: positive					0.309	0.113	0.006	0.271
Outcome: neutral					0.078	0.075	0.297	0.069
Outcome: negative					−0.416	0.110	<0.001	−0.365
Gender (1 = male)	−0.030	0.060	0.611	−0.027	−0.029	0.060	0.632	−0.025
Age	0.004	0.002	0.085	0.003	0.004	0.002	0.048	0.004
National id. (1 = Australian)	0.028	0.070	0.691	0.024	0.031	0.069	0.658	0.027
Trust in police effectiveness T2								
Trust in police effectiveness T1	0.450	0.035	<0.001	0.403	0.439	0.034	<0.001	0.392
Process: positive	0.327	0.192	0.089	0.293				
Process: neutral	0.011	0.080	0.085	0.010				
Process: negative	−0.358	0.080	<0.001	−0.321				
Outcome: positive					0.245	0.139	0.078	0.219
Outcome: neutral					0.013	0.071	0.859	0.011
Outcome: negative					−0.601	0.098	<0.001	−0.536
Gender (1 = male)	−0.103	0.060	0.085	−0.093	−0.095	0.060	0.115	−0.084
Age	0.004	0.002	0.001	0.006	0.007	0.002	<0.001	0.006
National id. (1 = Australian)	0.006	0.067	0.924	0.006	−0.005	0.067	0.943	−0.004

Table 8 (continued)

Measurement	Model 1 (process)				Model 2 (outcome)			
	Est.	SE	p	Std.	Est.	SE	p	Std.
Duty to obey T2								
Duty to obey T1	0.381	0.032	<0.001	0.350	0.378	0.033	<0.001	0.346
Process: positive	0.785	0.139	<0.001	0.721				
Process: neutral	-0.146	0.087	0.012	-0.134				
Process: negative	-0.217	0.086	0.095	-0.199				
Outcome: positive					0.630	0.130	<0.001	0.577
Outcome: neutral					-0.172	0.081	0.033	-0.158
Outcome: negative					-0.306	0.105	0.003	-0.280
Gender (1=male)	-0.155	0.062	0.013	-0.142	-0.144	0.062	0.020	-0.132
Age	-0.001	0.002	0.605	-0.001	-0.001	0.002	0.816	0.000
National id. (1=Australian)	0.036	0.069	0.599	0.033	0.048	0.069	0.481	0.044
Process: positive (ref: neutral)								
Trust in procedural fairness T1	-0.162	0.318	0.611	-0.162				
Trust in police effectiveness T1	0.475	0.214	0.026	0.475				
Duty to obey T1	0.622	0.287	0.030	0.622				
Process: negative (ref: neutral)								
Trust in procedural fairness T1	-0.491	0.128	<0.001	-0.491				
Trust in police effectiveness T1	-0.042	0.116	0.717	-0.042				
Duty to obey T1	0.022	0.122	0.859	0.022				
Process: no cont. (ref: neutral)								
Trust in procedural fairness T1	-0.208	0.112	0.062	-0.208				
Trust in police effectiveness T1	0.254	0.099	0.010	0.254				
Duty to obey T1	0.112	0.107	0.296	0.112				

Table 8 (continued)

Measurement	Model 1 (process)				Model 2 (outcome)			
	Est.	SE	p	Std.	Est.	SE	p	Std.
Outcome: positive (ref: neutral)								
Trust in procedural fairness T1					0.111	0.180	0.538	0.111
Trust in police effectiveness T1					−0.019	0.169	0.909	−0.019
Duty to obey T1					0.546	0.175	0.002	0.546
Outcome: neg. (ref: neutral)								
Trust in procedural fairness T1					−0.229	0.135	0.089	−0.229
Trust in police effectiveness T1					−0.494	0.120	<0.001	−0.494
Duty to obey T1					0.112	0.127	0.333	0.123
Outcome: no cont. (ref: neutral)								
Trust in procedural fairness T1					0.025	0.102	0.809	0.025
Trust in police effectiveness T1					0.050	0.091	0.578	0.050
Duty to obey T1					0.185	0.096	0.055	0.185
Cov. TPF & TPE T1	0.372	0.033	<0.001	0.372	0.367	0.033	<0.001	0.367
Cov. TPF & Duty T1	0.371	0.035	<0.001	0.371	0.374	0.035	<0.001	0.374
Cov. TPE & Duty T1	0.244	0.031	<0.001	0.244	0.243	0.031	<0.001	0.243
Cov. TPF & TPE T2	0.387	0.043	<0.001	0.387	0.383	0.043	<0.001	0.383
Cov. TPF & Duty T2	0.415	0.056	<0.001	0.415	0.429	0.055	<0.001	0.429
Cov. TPE & Duty T2	0.340	0.055	<0.001	0.340	0.339	0.057	<0.001	0.339
Loglikelihood	−17,357.108				−17,455.219			
BIC	35,365.417				35,561.892			
Estimation method	Maximum likelihood with robust SE				Maximum likelihood with robust SE			
N	1099				1102			

Appendix 6: Latent Moderated Structural Modeling: Full Models

See Table 9.

Table 9 Latent moderated structural models as presented in Figs. 7, 8, and 9

Measurement	Model 3 (proc. fairness)			Model 4 (pol. effectiveness)			Model 5 (duty to obey)		
	Est.	SE	p	Est.	SE	p	Est.	SE	p
Trust in procedural fairness T1									
Dignity and respect	0.485	–	–						
t									
Opportunity to express views	0.663	–	–						
Listen before making decisions	0.710	–	–						
Decisions upon facts	0.525	–	–						
Trust in procedural fairness T2									
Dignity and respect	0.485	–	–						
t									
Opportunity to express views	0.663	–	–						
Listen before making decisions	0.710	–	–						
Decisions upon facts	0.525	–	–						
Trust in police effectiveness T1									
Solving crime				0.495	–	–			
Preventing crime				0.636	–	–			
Keeping order				0.560	–	–			
Trust in police effectiveness T2									
Solving crime				0.495	–	–			

Table 9 (continued)

Measurement	Model 3 (proc. fairness)			Model 4 (pol. effectiveness)			Model 5 (duty to obey)		
	Est.	SE	p	Est.	SE	p	Est.	SE	p
Preventing crime				0.636	–	–			
Keeping order				0.560	–	–			
Duty to obey T1									
Moral obligation							0.614	–	–
Obey with good will							0.456	–	–
Duty to obey T2									
Moral obligation							0.614	–	–
Obey with good will							0.456	–	–
Process evaluation									
Opportunities to express	0.591	–	–	0.591	–	–	0.591	–	–
Views were considered	0.584	–	–	0.584	–	–	0.584	–	–
Given an honest explanation	0.690	–	–	0.690	–	–	0.690	–	–
Understood police action	0.695	–	–	0.695	–	–	0.695	–	–
Outcome evaluation									
Satisfied with the outcome	0.970	–	–	0.970	–	–	0.970	–	–
Outcome was fair	0.929	–	–	0.929	–	–	0.929	–	–
Outcome was expected	0.693	–	–	0.693	–	–	0.693	–	–
Outcome was deserved	0.928	–	–	0.928	–	–	0.928	–	–
Structural									
Trust in procedural fairness T2									
Trust in procedural fairness T1	0.397	0.051	<0.001						
Satisfaction with process	0.373	0.064	<0.001						
Satisfaction with process X Trust in proc. fairness T1	−0.107	0.058	0.064						
Satisfaction with outcome	0.051	0.059	0.383						

Table 9 (continued)

Measurement	Model 3 (proc. fairness)			Model 4 (pol. effectiveness)			Model 5 (duty to obey)		
	Est.	SE	p	Est.	SE	p	Est.	SE	p
Satisfaction with outcome X Trust in proc. fairness T1	0.074	0.072	0.305						
Gender (1 = male)	0.005	0.082	0.948						
Age	0.001	0.003	0.721						
National identity (1 = Australian)	0.127	0.104	0.224						
Trust in police effectiveness T2									
Trust in police effectiveness T1				0.462	0.049	<0.001			
Satisfaction with process				0.049	0.063	0.437			
Process evaluation X Trust in effectiveness T1				0.060	0.059	0.310			
Satisfaction with outcome				0.274	0.070	<0.001			
Outcome evaluation X Trust in effectiveness T1				−0.132	0.063	0.036			
Gender (1 = male)				−0.096	0.089	0.277			
Age				0.010	0.003	<0.001			
National identity (1 = Australian)				0.108	0.105	0.300			
Duty to obey T2									
Duty to obey T1							0.409	0.047	<0.001
Satisfaction with process							0.118	0.063	0.060
Process evaluation X Duty to obey T1							0.070	0.060	0.250
Satisfaction with outcome							0.165	0.071	0.020
Outcome evaluation X Duty to obey T1							−0.060	0.078	0.446
Gender (1 = male)							−0.121	0.096	0.205
Age							0.003	0.003	0.347
National identity (1 = Australian)							0.064	0.114	0.575
Cov. process evaluation& outcome evaluation	0.676	0.033	<0.001	0.679	0.033	<0.001	0.679	0.033	<0.001

Table 9 (continued)

Measurement	Model 3 (proc. fairness)			Model 4 (pol. effectiveness)			Model 5 (duty to obey)		
	Est.	SE	p	Est.	SE	p	Est.	SE	p
Cov. process evaluation & TPF T1	0.398	0.053	<0.001						
Cov. outcome evaluation & TPF T1	0.271	0.046	<0.001						
Cov. process evaluation & TPE T1				0.307	0.056	<0.001			
Cov. outcome evaluation & TPE T1				0.293	0.053	<0.001			
Cov. process evaluation & Duty T1							0.232	0.064	<0.001
Cov. outcome evaluation & Duty T1							0.190	0.055	0.001
Loglikelihood	−6604.6977			−5465.019			−5010.848		
BIC	13,494.282			11,184.618			10,245.969		
Estimation method	Maximum likelihood with robust SE			Maximum likelihood with robust SE			Maximum likelihood with robust s.e.		
N	429			429			429		

References

Allison PD (1990) Change scores as dependent variables in regression analysis. Sociol Methodol 20:93–114. https://doi.org/10.2307/271083

Augustyn MB (2016) Updating perceptions of (in)justice). J Res Crime Delinquen 53(2):255–286. https://doi.org/10.1177/0022427815616991

Bakk Z, Kuha J (2018) Two-step estimation of models between latent classes and external variables. Psychometrika 83(4):871–892. https://doi.org/10.1007/s11336-017-9592-7

Baumeister RF, Bratlavky E, Finkenauer C, Vohs KD (2001) Bad is stronger than good. Rev Gen Psychol 5(4):323–370. https://doi.org/10.1037/1089-2680.5.4.323

Bottoms A, Tankebe J (2012) Beyond procedural justice: A dialogic approach to legitimacy in criminal justice. J Crimin Law Criminol 102(1):119–170

Bradford B (2010) Convergence, not divergence? Trends and trajectories in public contact and confidence in the police. Br J Criminol 51(1):179–200. https://doi.org/10.1093/bjc/azq078

Bradford B (2017) Stop and search and police legitimacy. Routledge, London

Bradford B, Jackson J, Stanko EA (2009) Contact and confidence: revisiting the impact of public encounters with the police. Policing Soc 19(1):20–46. https://doi.org/10.1080/10439460802457594

Bradford B, Murphy K, Jackson J (2014) Officers as mirrors: policing, procedural justice and the (re)production of social identity. Br J Criminol 45:527–550. https://doi.org/10.1093/bjc/azu021

Brown B, Benedict WR (2002) Perceptions of the police. Policing Int J 25(3):543–580. https://doi.org/10.1108/13639510210437032

Fine A, Cauffman E (2015) Race and justice system attitude formation during the transition to adulthood. J Dev Life-Course Criminol 1:325–349. https://doi.org/10.1007/s40865-015-0021-2

Fine A, Cavanagh C, Donley S, Steinberg L, Frick PJ, Cauffman E (2016) The role of peers arrests on the development of youth's attitudes towards the justice system. Law Hum Behav 40(2):211–218. https://doi.org/10.1037/lhb0000167

Fine A, Cavanagh C, Donley S, Frick PJ, Steinberg L, Cauffman E (2017) Is the effect of justice system attitudes on recidivism stable after youths' first arrest? Race and legal socialization among first-time youth offenders. Law Hum Behav 41(2):146–158. https://doi.org/10.1037/lhb0000229

Gau J (2010) A longitudinal analysis of citizens' attitudes about police. Policing Int J Police Strateg Manag 33(2):236–252. https://doi.org/10.1108/13639511011044867

Hamaker EL, Kuiper RM, Grasman RP (2015) A critique of the cross-lagged panel model. Psychol Methods 20(1):102–116. https://doi.org/10.1037/a0038889

Hamm JA, Trinkner R, Carr JD (2017) Fair process, trust, and cooperation: Moving toward an integrated framework of police legitimacy. Criminal Justice Behav 44(9):1183–1212. https://doi.org/10.1177/0093854817710058

Hardin R (1996) Trustworthiness. Ethics 107(1):26–42. https://doi.org/10.1086/233695

Hinds H, Murphy K (2007) Public satisfaction with police: Using procedural justice to improve police legitimacy. Aust N Z J Criminol 40(1):27–42. https://doi.org/10.1375/acri.40.1.27

Jackson J (2018) Norms, normativity, and the legitimacy of justice institutions: international perspectives. Ann Rev Law Soc Sci 14:145–165. https://doi.org/10.1146/annurev-lawsocsci-110316-113734

Jackson J, Bradford B (2019) Blurring the distinction between empirical and normative legitimacy? A methodological commentary on 'Police legitimacy and citizen cooperation in China'. Asian Journal of Criminology 14:265–289. https://doi.org/10.1177/0093854817710058

Jackson J, Gau J (2015) Carving up concepts? Differentiating between trust and legitimacy in public attitudes towards legal authority. In: Shockley E, Neal T, PytlikZillig L, Bornstein B (eds) Interdisciplinary perspectives on trust: Towards theoretical and methodological integration. Springer, London

Jackson J, Kuha J (2016) How theory guides measurement: public attitudes towards crime and policing. In: Handbook on measurement issues in criminology and criminal justice. Wiley Online Library

Jackson J, Pósch K (2019) New directions for research into fairness and legal authority: A focus on causal mechanisms. In: Lind A (ed) Social Psychology and Justice (Frontiers of Social Psychology Series). Routledge, Oxon

Jackson J, Bradford B, Hough M, Myhil A, Quinton P, Tyler T (2012) Why do people comply with the law? Legitimacy and the influence of legal institutions. Br J Criminol 52(6):1051–1071. https://doi.org/10.1093/bjc/azs032

Jackson J, Bradford B, Stanko EA, Hohl K (2013) Just authority? Trust in the police in England and Wales. Willan, London

Jackson J, Brunton-Smith I, Bradford B, Oliveira TR, Pósch K, Sturgis P (2020) Police legitimacy and the norm to cooperate: Using a mixed effects location-scale model to estimate social norms at a small spatial scale. J Quant Criminol. https://doi.org/10.1007/s10940-020-09467-5

Kaiser K, Reisig MD (2019) Legal socialization and self-reported criminal offending: the role of procedural justice and legal orientations. J Quant Criminol 35:135–154. https://doi.org/10.1007/s1094 0-017-9375-4

Keele L, Kelly NJ (2006) Dynamic models for dynamic theories: the ins and outs of lagged dependent variables. Polit Anal 14(2):186–205. https://doi.org/10.1093/pan/mpj006

Kenny D, Kaniskan B, Betsy McCoach D (2014) The performance of RMSEA in models with small degrees of freedom. Sociol Methods Res 44(3):486–507. https://doi.org/10.1177/0049124114543236

Klein A, Moosbrugger H (2000) Maximum likelihood estimation of latent interaction effects with the LMS method. Psychometrika 65(4):457–474. https://doi.org/10.1007/BF02296338

McLean K, Wolfe SE, Pratt TC (2018) Legitimacy and the life course: an age-graded examination of changes in legitimacy attitudes over time. J Res Crime Delinquency 56(1):42–83. https://doi.org/10.1177/0022427818793934

Mulvey E (2016) Research on Pathways to Desistance [Maricopa County, AZ and Philadelphia County, PA]: Subject Measures, 2000–2010. Inter-university Consortium for Political and Social Research [distributor], Ann Arbor. 14 March 2016. https://doi.org/10.3886/ICPSR29961.v2

Murphy K, Barkworth J (2014) Victim willingness to report crime to police: Does procedural justice or outcome matter most? Victims Offenders 9(2):178–204. https://doi.org/10.1080/15564886.2013.872744

Murphy K, Hinds L, Fleming J (2008) Encouraging public cooperation and support for police. Policing Soc 18(2):136–155. https://doi.org/10.1080/10439460802008660

Murphy K, Murphy B, Mearns M (2010a). The 2007 crime, safety and policing in Australia survey: Survey methodology and preliminary findings. Alfred Deakin Research Institute Working Paper 16. Deakin University, Geelong, Australia

Murphy K, Murphy B, Mearns M (2010b) The 2009 crime, safety and policing in Australia survey: Survey methodology and preliminary findings. Alfred Deakin Research Institute Working Paper 17. Deakin University, BurwoodGeelong, Australia

Muthén B, Asparouhov T (2012) Latent variable interactions. Unpublished manuscript. https://www.statm odel.com/download/LVinteractions.pdf

Myhill A, Bradford B (2012) Can police enhance public confidence by improving quality of service? Results from two surveys in England and Wales. Policing Soc 22(4):397–425. https://doi.org/10.1080/10439 463.2011.641551

Na C, Loughran TA, Paternoster R (2015) On the importance of treatment effect heterogeneity in experimentally-evaluated criminal justice interventions. J Quant Criminol 31(2):289–310. https://doi.org/10.1007/s10940-014-9245-2

Nagin DS, Telep CW (2017) Procedural justice and legal compliance. Ann Rev Law Soc Sci 13:5–28. https ://doi.org/10.1146/annurev-lawsocsci-110316-113310

Nylund KL, Asparouhov T, Muthén B (2007) Deciding on the number of classes in latent class analysis and growth mixture modeling: a Monte Carlo simulation study. Struct Eq Model Multidiscip J 14(4):535–569. https://doi.org/10.1080/10705510701575396

Piquero AR, Fagan F, Mulvey EP, Steinberg L, Odgers C (2005) Developmental trajectories of legal socialization among serious adolescent offenders. J Crimin Law Criminol 96(1):267–298

Pósch K, Jackson J, Bradford B, MacQueen S (2020) "Truly free consent"? Clarifying the nature of police legitimacy using causal mediation analysis. J Exp Criminol 1:1. https://doi.org/10.1007/s11292-020-09426-x

Rengifo AF, Slocum LA, Chillar V (2019) From impressions to intentions: Direct and indirect effects of police contact on willingness to report crimes to law enforcement. J Res Crime Delinquency 56(3):412–450. https://doi.org/10.1177/0022427818817338

Rosenbaum DP, Schuck AM, Costello SK, Hawkins DF, Ring MK (2005) Attitudes toward the police: the effects of direct and vicarious experience. Police quarterly. 8(3):343–365. https://doi.org/10.1177/1098611104271085

Rosin P, Soyzman E (2001) Negativity bias, negativity dominance, and cognition. Personal Soc Psychol Rev 5:296–320. https://doi.org/10.1207/S15327957PSPR0504_2

Sargeant E, Murphy K, Madon N (2018) Is dissatisfaction with police inevitable? Testing an integrated model of motivational postures and procedural justice in police-citizen contacts. Police Pract Res Int J 19(2):125–137. https://doi.org/10.1080/15614263.2018.1418156

Schubert CA, Mulvey EP, Pitzer L (2016) Differentiating serious adolescent offender who exit the justice system from those who do not. Criminology 54(1):56–85. https://doi.org/10.1111/1745-9125.12098

Skogan WG (2006) Asymmetry in the impact of encounters with the police. Policing Soc 16:99–126. https ://doi.org/10.1080/10439460600662098

Skogan WG (2012) Assessing asymmetry: the life course of a research project. Polic Soc 22(3):270–279. https://doi.org/10.1080/10439463.2012.704035

Slocum LA (2018) The effect of prior police contact on victimization reporting: Results from the police-public contact and national crime victimization surveys. J Quant Criminol 34(2):535–589. https://doi.org/10.1007/s10940-017-9345-x

Slocum LA, Wiley S (2018) "Experience of the expected?": Race and ethnicity differences in the effects of police contact on youth. Criminology 56(2):402–432. https://doi.org/10.1111/1745-9125.12174

Slocum LA, Wiley S, Esbensen FA (2016) The importance of being satisfied: A longitudinal exploration of police contact, procedural injustice, and subsequent delinquency. Criminal Justice Behav 43(1):7–26. https://doi.org/10.1177/0093854815609069

Sun IY, Wu Y, Li L (2019) Response to criticism: Understanding the conceptual and measurement models of legitimacy. Asian J Criminol 14(4):305–308. https://doi.org/10.1007/s11417-019-09303-1

Sunshine J, Tyler T (2003) The role of procedural justice and legitimacy in shaping public support for policing. Law Soc Rev 37(3):513–548. https://doi.org/10.1111/1540-5893.3703002

Tankebe J (2013) Viewing things differently: the dimensions of public perceptions of legitimacy. Criminology 51(1):103–135. https://doi.org/10.1111/j.1745-9125.2012.00291.x

Trinkner R (2019) Clarifying the contours of the police legitimacy measurement debate: a response to Cao and Graham. Asian J Criminol 14(4):309–335. https://doi.org/10.1007/s11417-019-09300-4

Trinkner R, Jackson J, Tyler T (2018) Bounded authority: expanding 'appropriate' police behavior beyond procedural justice. Law Hum Behav 32(3):280–293. https://doi.org/10.1037/lhb0000285

Tyler T (2017) Can the police enhance their popular legitimacy through their conduct? Using empirical research to inform law. Univ Ill Law Rev 2017(5):1971–2008

Tyler T (1990) Why people obey the law. Princeton University Press, Princeton

Tyler T, Fagan J (2008) Legitimacy and cooperation: why do people help the police fight crime in their communities? Ohio State J Crimin Law 6(1):231–275

Tyler T, Jackson J (2014) Popular legitimacy and the exercise of legal authority: Motivating compliance, cooperation, and engagement. Psychol Publ Policy Law 20(1):78–95. https://doi.org/10.1037/a0034514

Tyler T, Fagan J, Geller A (2014) Street stops and police legitimacy: Teachable moments in young urban men's legal socialization. J Empir Legal Stud 11(4):751–785. https://doi.org/10.1111/jels.12055

Vickers AJ, Altman DG (2001) Analysing controlled trials with baseline and follow up measurements. BMJ 39(2):1123–1124. https://doi.org/10.1136/bmj.323.7321.1123

Waddington PA (1999) Police (canteen) sub-culture: An appreciation. Br J Criminol 39(2):287–309. https://doi.org/10.1093/bjc/39.2.287

Wiley SA, Esbensen FA (2016) The effect of police contact: Does official intervention result in deviance amplification? Crime Delinquency 62(3):283–307. https://doi.org/10.1177/0011128713492496

Affiliations

Thiago R. Oliveira[1] · **Jonathan Jackson[1]** · **Kristina Murphy[2]** · **Ben Bradford[3]**

[1]   Department of Methodology, London School of Economics and Political Science, Houghton Street, London WC2A 2AE, UK

[2]   Griffith Criminology Institute, Griffith University, Brisbane, Australia

[3]   UCL Jill Dando Institute of Security and Crime Science, University College London, London, UK