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Procedural Justice versus Risk Factors for Offending: Predicting Recidivism in Youth

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Law and Human Behavior

DOI: <https://doi.org/10.1037/lhb0000055>

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### Abstract

Theories of procedural justice suggest that individuals who experience respectful and fair legal decision-making procedures are more likely to believe in the legitimacy of the law, and, in turn, are less likely to reoffend. However, few studies have examined these relationships in youth. To begin to fill this gap in the literature, in the current study the authors studied 92 youth (67 male, 25 female) on probation regarding their perceptions of procedural justice and legitimacy, and then monitored their offending over the subsequent six months. Results indicated that perceptions of procedural justice predicted self-reported offending at three months but not at six months, and that youths' beliefs about the legitimacy of the law did not mediate this relationship. Furthermore, procedural justice continued to account for unique variance in self-reported offending over and above the predictive power of well-established risk factors for offending (i.e., peer delinquency, substance abuse, psychopathy, and age at first contact with the law). Theoretically, the current study provides evidence that models of procedural justice developed for adults are only partially replicated in a sample of youth; practically, this research suggests that by treating adolescents in a fair and just manner, justice professionals may be able to reduce the likelihood that adolescents will reoffend, at least in the short term.

Keywords: Procedural Justice; Legitimacy; Young Offenders; Offending; Psychopathy

### Procedural Justice vs. Risk Factors for Offending: Predicting Recidivism in Youth

Procedural justice is defined as the fairness of the process and procedures used to make legal decisions. Theories of procedural justice suggest that when individuals experience respectful and fair decision-making procedures—such as being treated respectfully and impartially by trustworthy authorities, and being given the opportunity to participate in their proceedings—they are more likely to perceive the law to be legitimate (Fagan & Tyler, 2005; Sunshine & Tyler, 2003; Tyler & Huo, 2002; Tyler & Wakslak, 2004; Wells, 2007) and, in turn, are more likely to comply with laws and regulations (Fagan & Tyler, 2005; Murphy & Gaylor, 2010; Murphy, Hinds, & Fleming, 2008; Reisig, Bratton & Gertz, 2007; Tyler, 2006a). While substantial strides in research on procedural justice have been made over the past 30 years, the vast majority of research has been conducted using adults. Much less research has been conducted with youth despite the potentially heightened relevance of procedural justice to this population. Theories of legal socialization state that adolescence is a time when attitudes toward the legal system are being developed (Fagan & Tyler, 2005; Lind & Tyler, 1988). This, in addition to the fact that adolescents are particularly likely to be sensitive to issues of fairness and respect (Woolard, Harvell, & Graham, 2008), may mean that youths' experiences of justice system fairness during the adolescent years may have a substantial impact on their lifelong risk of offending.

In terms of the research on procedural justice and offending, studies since the 1970s have demonstrated that individuals' beliefs about the fairness of their treatment has important implications for their future behavior, particularly within legal contexts (Tyler, 2006a). One study found that men who came into contact with police as a consequence of reported spousal abuse were less likely to reoffend if they felt that the police officers treated them fairly (Paternoster, Bachman, Brame, & Sherman, 1997). Other research has shown that when police are evaluated as being fair in the exercise of their authority, people are more likely to cooperate with them and comply with the law (Sunshine & Tyler, 2003). Conversely, when police are evaluated as behaving disrespectfully or unfairly (e.g., using threats), people are less inclined to cooperate with them (Mastrofski, Snipes, & Supina, 1996; McCluskey, Mastrofski, & Parks, 1999; McCluskey, 2003).

Research on procedural justice also suggests that its effect on behavior is not short-lived. Pruitt, Peirce, McGillicuddy, Welton, and Castrianno (1993) found that the fairness of mediated sessions continued to impact the extent to which individuals complied with their mediated agreement four and eight months later. Similarly, in Paternoster et al.'s (1997) study, individuals were tracked for an average of 14 months, suggesting that fair treatment by police has a somewhat long-term effect on offending. The persistence of the procedural justice effect is in part responsible for the interest this construct has generated, and suggests that being treated fairly can produce lasting changes in the extent to which individuals 'buy into' or voluntarily comply with authorities or laws. However, research examining the procedural justice model has several key limitations.

First, while research with adults suggests that experiences of procedural justice are related to future behavior, little parallel research has been conducted with youth. One study found an inverse relationship between the perceived fairness of male young offenders treatment

by court officials and the number of behavioral infractions in custody two weeks later (Kaasa et al., 2008). Another found that Jamaican high school students who believed police acted in a procedurally just manner were more likely to say they would help the police combat crime (Reisig & Lloyd, 2009). Restorative justice conferences have been shown to increase youths' perceptions of procedural justice (McGarrell, 2001; Sherman & Barnes, 1997) and decrease the likelihood of reoffending in some cases (Luke & Lind, 2002; McGarrell & Hipple, 2007; Sherman & Barnes, 1997). However, the extent to which procedural justice versus other mechanisms (e.g., youths' level of remorse) are responsible for this effect is not yet clear, nor is the extent to which offender characteristics impact the relationship between conferences and recidivism. Finally, results from the Pathways to Desistance study indicated that procedural justice largely was not a predictor of self-reported offending in youth over a two-year time period (Fagan & Piquero, 2007). In sum, more research is needed to determine whether perceptions of procedural justice influence youths' actual levels of offending and whether these effects hold over time.

A second limitation is that while researchers have suggested that procedural justice is an important predictor and antecedent of legitimacy beliefs, and that legitimacy beliefs may account for the relationship between procedural justice and legal compliance (Fagan & Piquero, 2007; Levi, Sacks, & Tyler, 2009; Tyler, 1997, 2003; Tyler, Sherman, Strang, Barnes, & Woods, 2007), few studies have tested this relationship. Legitimacy refers to individuals' sense of obligation and self-reported willingness, based on their values and beliefs, to obey authorities (Levi et al., 2009). While research with adolescents has supported the relationship between procedural justice and legitimacy (Fagan & Tyler, 2005; Harvell, 2009; Hinds, 2007; Kaasa, Malloy, & Cauffman, 2008; Piquero, Fagan, Mulvey, Steinberg, & Odgers, 2005; Reisig & Lloyd, 2009) and between legitimacy beliefs and offending or self-reported legal compliance (Fagan & Piquero, 2007; Fagan & Tyler, 2005; Hinds, 2009; but see also Reisig & Lloyd, 2009), only one study directly examined whether legitimacy beliefs mediate the relationship between procedural justice and behavior. Specifically, Murphy and Gaylor (2010) surveyed Australian secondary school students aged 12 to 17 and found that legitimacy mediated the relationship between procedural justice and a reported willingness to cooperate with police. As such, greater exploration of the procedural justice model, as proposed in the adult literature, is warranted with youth.

Another major limitation of the research on procedural justice and legal compliance is the inability of most studies to control for risk factors related to offending, and this limitation applies to both the youth and adult literature. For example, studies to date have not examined whether the inclusion of mental health difficulties related to future offending in a regression model eliminates the predictive power of procedural justice on behavioral outcomes. Mental health factors related to offending include psychopathic characteristics (Corrado, Vincent, Hart, & Cohen, 2004; Edens, Campbell, & Weir, 2007; Gretton, Hare, & Catchpole, 2004; Salekin, 2008; Vaughn, Litschge, DeLisi, Beaver, & McMillen, 2008; Vincent, Odgers, McCormick, & Corrado, 2008) and substance use or addictions (Douglas, Epstein, & Poythress, 2008; Grisso, 2004; Reppucci, Fried, & Schmidt, 2002). Other factors strongly predictive of recidivism in youth, such as a younger age at first contact with the law (Dahlberg & Simon, 2006; Douglas et al., 2008; Farrington, 2003; Fried & Reppucci, 2002; Knight, Little, Losoya, & Mulvey, 2004) and the presence of delinquent peers (Elliott & Menard, 1996; Knight et al., 2004; Lipsey &

Derzon, 1998; Moffitt, Caspi, Dickson, Silva, & Stanton, 1996) have also been ignored thus far. However, it could be that youth with features predictive of offending, such as those outlined above, are less likely to perceive their treatment as procedurally just, and that it is these individual differences that account for the observed relationship between procedural justice and offending.

### **The Current Study**

To help address these gaps in the literature, this study examined the relationship between procedural justice and offending in a sample of young offenders on probation. This is in contrast to the vast majority of previous research, which has been conducted using adults. Most of the previous studies of youth have used cross-sectional designs (e.g., Fagan & Tyler, 2005) or very short-term (i.e., two-week) longitudinal designs (e.g., Harvell, 2009), while this study prospectively examined the impact of perceived procedural justice and legitimacy on offending at three and six months. This allowed for an investigation of how and whether the effects of procedural justice change over time. Also, whereas the majority of existing studies of youth have focused on willingness to cooperate with police or behavioral infractions committed while in custody, which have a weak relationship to recidivism (Lovell, Johnson, & Cain, 2007), the current study focused on offending as measured via both self-report and official records.

Given the potentially important role of legitimacy, the present study tested whether legitimacy beliefs mediated the relationship between procedural justice and offending. Finally, it examined whether procedural justice and legitimacy beliefs continued to predict reoffending once the predictive power of well-documented risk factors for offending (i.e., levels of psychopathy, substance use problems, age at first contact with the law, and peer delinquency) were taken into account.

It was hypothesized that procedural justice would predict offending at three and six months, and that legitimacy beliefs would mediate the relationship between perceptions of procedural justice and reoffending. It was also hypothesized that procedural justice, via legitimacy beliefs, would make a unique contribution to the prediction of recidivism over and above the predictive power of other risk factors.

## **Method**

### **Participants**

Participants in this study were youth on probation in the province of British Columbia, Canada. Of the 102 youth who participated, 10 did not complete an adequate number of items on the procedural justice and legitimacy measures (i.e., 75% or more) for their data to be included, leaving a total final sample of 92. Youth were aged 12-17 ( $M = 15.87$ ,  $SD = 1.21$ ). The majority of youth were male ( $n = 67$ , 72.83%) and white ( $n = 39$ , 42.39%), although a substantial proportion ( $n = 30$ , 32.61%) identified as at least partially Aboriginal. This ethnic and gender distribution is very similar to national and provincial rates for youth on probation, suggesting that our sample is fairly representative in this respect (Calverley, Cotter, & Halla, 2010). Youth were charged with an average of 2.51 index offenses ( $SD = 2.09$ ), with a range from 1 to 10 offenses. Youth had been on probation for an average of 9.30 months ( $SD = 5.44$ )

for their index offense at the time of interview. Demographic characteristics of the sample can be found in Table 1.

--Insert Table 1 about here--

Since the current study is a six month longitudinal study, the number of youth at each time point is slightly different due to both attrition and missed interviews. Eighty-five youth completed the three month follow-up interview, representing a loss of seven data points between the initial interview and the three month interview, and 73 youth completed the six month follow-up interview, representing a loss of 12 data points between the three month and six month interviews, and 19 data points in total.

### **Attrition**

Independent samples t-tests were used to determine whether youth who remained in the study differed from those who dropped out, based on the variables outlined in Table 1 (except for ethnicity and gender, which were examined using chi square analyses), and on the measures used in this study (e.g., procedural justice, legitimacy, PCL-YV scores, etc.). No significant differences at the  $p < .05$  level were found at either the three month or six month follow-up.

### **Procedures**

Ethics approval for this research was provided [removed for blind review]. All methods in this research project complied with ethics procedures. Probation officers and research assistants provided potential participants with preliminary information about the study and what participation would involve. A description of the procedure by which youth were recruited into the study follows, and Figure 1 provides a pictorial depiction of this process.

--Insert Figure 1 about here--

At the time of data analysis, 367 youth had been approached from the 11 probation offices in the Lower Mainland of BC. Of these, 338 (92.10%) expressed initial interest in volunteering for the study and 29 (7.90%) did not. Of those who expressed interest, 128 (37.87%) were eligible to participate and became enrolled in the study. Two hundred and ten youth did not become enrolled, most commonly because they did not meet eligibility criteria ( $n = 91, 26.92\%$ ), which included being from the Greater Vancouver Regional District, being on probation at the start of participation, and being between the ages of 12 and 17, inclusive. The second most common reason that youth did not become enrolled was that they declined to participate after hearing about study requirements in greater detail (e.g., the time commitment) ( $n = 51, 15.09\%$ ). One hundred and two of these youths continued on to complete their second interview with the study, which we consider the initial interview. Three and six month time points were chosen to interview youth as these were felt to be long enough periods to allow for offending to occur but not so long as to make it difficult for youth to recall their actions.

## Materials

**Procedural justice.** Given the absence of procedural justice measures that have been validated in samples of young offenders, a Procedural Justice Scale was adapted for the purpose of this study, titled the Youth Justice System Procedural Justice Scale (subsequently referred to as the Procedural Justice Scale). It is based upon Tyler's (2000) theoretical conceptualization of the four primary aspects of procedural justice—respect, impartiality, trustworthiness, and participation—and represents only a slight modification of Peterson-Badali, Care, and Broeking's (2007) Perceptions of Fairness in Lawyer-Client Interactions scale. The scale directs youth to report on their overall experience of procedural fairness within the youth justice system—that is, within court or with the judge, with the police, with the defense and prosecuting lawyers, and with their probation officer. The Procedural Justice Scale was sent to two consultants with relevant substantive expertise during its development: a Canadian clinical/forensic researcher and an American developmental/social psychology researcher with legal training for suggestions on content and wording.

The Procedural Justice Scale consisted of 20 opinion items rated on a 4-point Likert scale (*Strongly Disagree* to *Strongly Agree*) from which a summary score was calculated (see Table 2 for the descriptive characteristics of all measures). The internal reliability of this scale as measured by Cronbach's alpha was excellent (.93) (Cronbach, 1990; Nunnally, 1978). An analysis of convergent validity was conducted with another procedural justice measure, the Court Fairness Scale (Kaasa et al., 2008). This 15-item questionnaire assessed youth's perceptions of the fairness of their trial, their judge, the prosecutor, and their lawyer, and was strongly and positively correlated with the Procedural Justice Scale ( $r = .70, p < .01$ ) (Cohen, 1988), providing further support and validation for the scale we used in the present study.

--Insert Table 2 about here--

**Legitimacy.** A legitimacy scale developed for this project and titled the Youth Justice System Legitimacy Scale (subsequently referred to as the Legitimacy Scale) was adapted from Tyler's (2006a) legitimacy measure used in the Chicago Study based on the recommendations from the two survey development consultants referred to above. Minor changes altered the scale so that it referred to the youth justice system rather than the specific players in the adult criminal system in Chicago. Respondents rated each statement using a four-point Likert scale ranging from *Strongly Disagree* to *Strongly Agree*. A summary score representing youths' perceptions of legitimacy was calculated by averaging across all items. The internal reliability of this scale as measured by Cronbach's alpha was good at .89 (Cronbach, 1990; Nunnally, 1978).

**Offending.** Youth completed the Self-Report of Offending (SRO), originally developed by Huizinga, Esbensen, and Weiher (1991) at the three month and six month follow-up interviews. Youth were asked how often they had committed each listed crime in the *previous three months*. Youth responded using a 5-point Likert scale with the following response options: Never, Once, Two or Three Times, Four Times, or Five or more times. A total self-reported offending score was calculated for each youth at each follow-up by summing across all 23 items of the SRO. Also, items on the SRO were broken down into income offenses (i.e., those used to generate revenue or gain material goods) and offenses characterized by aggression or violence

(not for the purposes of obtaining material goods). Youths' responses on the 10 items in each category were summed to create a self-reported income offending score and self-reported violent offending score at each follow-up. In sum, the self-reported offending frequency variables for each youth were: total self-reported offending, income offending, and violent offending at three months, and these same variables at six months, and in each case youth were reporting on the previous three month period. Commonly endorsed offenses including being in a fight, damaging property, buying, selling or receiving stolen goods, and selling marijuana. Table 3 outlines offending base rates across variables.

--Insert Table 3 about here--

Youths' total number of official charges in the previous three months was also summed to create a total official offending score. The correlation between total official offending and total self-reported offending was non-significant, with youth typically self-reporting far more delinquent activity than was reflected in official charges (see Table 4). This aligns with previous research suggesting that self-report is far more sensitive to offending behavior than official records (see, e.g., Farrington, Jolliffe, Loeber, & Homish, 2007). Finally, youth were categorized dichotomously as offending or not based on both self-reported offending and official charges in the previous three months (0 = *non-offender*, 1 = *offender*). If there was a discrepancy (i.e., no official charges but the youth self-reported offending or vice versa) it was assumed the youth did offend.

--Insert Table 4 about here--

There was substantial positive skew within all offending frequency variables. Given that regression assumes that variables are normally distributed, transformation was used to normalize the data with a value of 1 added to each score to eliminate any 0 values (Osborne, 2002). A natural logarithm transformation produced normal datasets (i.e., skewness and kurtosis within the 0 to +/-1 range) for all self-report data. Even with transformation, the official offending data deviated somewhat from a normal distribution. Therefore, a more stringent significance level ( $p < .01$ ) was adhered to for tests involving this variable (Lumley, Diehr, Emerson, & Chen, 2002).

**Risk factors for offending.** The following risk factors were chosen based on the strength of their association with recidivism (Cottle, Lee, & Heilbrun, 2001), the clarity and consistency of their definitions across studies, and the size of the research base supporting the association.

**Age at first arrest:** For the purposes of the current study, age at first contact with the law was represented by youths' self-reported age at first arrest as this was believed to be the most sensitive indicator of contact with the legal system.<sup>1</sup>

**Delinquent peers:** The Delinquent Peers Scale was used to assess peer delinquency (Thornberry, Lizotte, Krohn, Farnworth, & Jang, 1994). The scale consisted of eight Likert scale-type items that measured the proportion of the youths' friends who were involved in

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<sup>1</sup> Youth self-reported on their age of first arrest and research assistants coded the PCL-YV three months prior to this study's baseline interview



various types of delinquent behaviors (e.g., theft, assaults). Similar to other studies (Le & Stockdale, 2005; Thornberry et al., 1994), the internal consistency in the current study was strong (.91).

**Alcohol/drug use:** The Massachusetts Youth Screening Instrument-Second Version (MAYSI-2; Grisso & Barnum, 2006) Alcohol/Drug Use scale was used to assess substance use problems. This scale consisted of eight items, such as “Used alcohol and drugs to feel better,” with a yes/no response format. The MAYSI-2 has been shown to have good psychometric properties, including good interrater reliability, test-retest reliability, construct validity, and concurrent validity (Archer, Stredny, Mason, & Arnau, 2004; Grisso, Barnum, Fletcher, Cauffman, & Peuschold, 2001), and was designed specifically for use with justice system-involved youth. The internal reliability of the Drug/Alcohol Use scale in the current study was good with a coefficient alpha of .75.

**Psychopathic features:** Each youth’s total score on the Psychopathy Checklist –Youth Version (PCL-YV; Forth, Kosson, & Hare, 2003) was used to represent levels of psychopathic personality traits. The 20 PCL-YV items were coded based on file information and youths’ self-reported information. The average PCL-YV score was 15.77 ( $SD = 7.3$ ), although scores ranged widely from 3 to 32. Interrater reliability for a random sample of 28 cases was .89 (two-way random effects model, absolute agreement for single raters) and internal reliability (Cronbach’s alpha) was .87.<sup>2</sup>

## Data Analyses

Data analyses examined whether procedural justice predicted offending across both follow-up periods. Further, analyses sought to examine whether any observed relationships between procedural justice and offending was mediated by youths’ beliefs about the legitimacy of the law. The causal steps strategy for testing mediation, popularized by Baron and Kenny (1986), is the most frequently employed in psychological research. In line with recommendations (Preacher & Hayes, 2004), for each dependent variable (i.e., offending behavior at each time point) a simple mediation model was run that used regression to estimate four different parameters: (1) the total effect of the procedural justice on reoffending (2) the direct effect of the procedural justice on the legitimacy (3) the direct effect of legitimacy on reoffending, controlling for the procedural justice, and (4) the direct effect of procedural justice on reoffending, controlling for legitimacy. However, given that Sobel’s (1982) test is now considered to be a more rigorous approach than the Baron and Kenny method (Holmbeck, 2002; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Preacher & Hayes, 2004), this test of the indirect effect was used to confirm primary analyses. As Sobel’s test is susceptible to biases in small samples, we created a bootstrapped sample of 5000 to estimate the true indirect effect within a 95% confidence interval using Preacher and Hayes’ (2004) macro for SPSS.

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<sup>2</sup> Total scores, rather than factor scores, were used in the current study because previous studies have found total scores to be predictive of recidivism in youth (e.g., Brandt, Wallace, Patrick, & Curtin, 1997; Gretton, McBride, Hare, O’Shaughnessy, & Kumka, 2001; Gretton et al., 2004; Salekin, 2008). Although recent research suggests that individual PCL-YV factors may be related to particular types of offending in youth (Corrado et al., 2004; Vincent, Vitacco, Grisso, & Corrado, 2003; Vincent et al., 2008), a consensus as to the nature of these relationships has yet to be reached.

In addition, power analyses were undertaken to determine what effect sizes planned primary data analyses could be expected to detect. The minimum odds ratio that logistic regressions could be expected to detect was 2.25 for the three month follow-up, and 2.42 for the six month follow-up. All linear regressions—containing from one to five predictor variables—had sufficient power (i.e., .80 or greater) to detect medium or large effect sizes, defined as  $f^2$  values of .15 and .35, but not small effect sizes ( $f^2$  values  $< .02$ ) (Cohen, 1988).

## Results

### Demographic Variables and Offending

First, the relationships between each offending variable and two demographic variables—age and gender—were examined using correlation, chi square analyses, and independent samples t-tests, as applicable, to determine whether either of these variables would need to be controlled for in subsequent analyses. Neither was related to the dichotomized offending variable, frequency of self-reported total, income, or violent offending, or frequency of official offending at three months. At six months, age was related to offending, dichotomized, with youth who offended being younger on average ( $M = 15.71$ ,  $SD = 1.32$ ) than those who did not ( $M = 16.36$ ,  $SD = .76$ ). None of the other relationships were significant. As such, age was controlled for in primary analyses involving the dichotomized offending variable at six months.

### Does Procedural Justice Predict Offending?

Logistic regression was used to determine whether procedural justice predicted the dichotomized offending variable. The model chi square for offending at three months was significant,  $\chi^2(1, N = 85) = 14.21$ ,  $p < .01$ , and the Hosmer and Lemeshow Test was non-significant,  $\chi^2(8, N = 85) = 6.30$ ,  $p = .61$ , suggesting that procedural justice had a significant effect on the model and that the model's estimates fit the data acceptably well. Nagelkerke's  $R^2$  of .22 indicated a modest relationship between procedural justice and the dichotomized offending variable, and prediction success increased from 69.0% in the constant-only model to 73.8% in the full model, again suggesting only a weak improvement in the classification error rate based on the inclusion of procedural justice in the model. However, the Wald criterion indicated that procedural justice made a significant contribution to prediction, and the  $e^\beta$  value was 0.15 (95% CI [.05, .47]) which, when inverted to account for the inverse relationship between predictor and criterion, was 6.67. This indicated that when procedural justice scores were raised by one unit (e.g., raising a youth's score from 1 to 2) the odds ratio is 6.67 times as large and therefore youth are 6.67 times more likely to fall into the nonoffender category. In contrast, after controlling for age, the relationship between procedural justice and the dichotomized offending variable at six months (which captured offending between the three month and six month follow-ups) was non-significant.

Next, a series of simple linear regressions was used to determine whether procedural justice predicted self-reported offending frequency (measured as a continuous variable) at 3 and six months. Results indicated that procedural justice was significantly and inversely predictive of self-reported offending frequency, including the frequency of total offending, income offending, and violent offending at the three month follow-up (see Table 5). Procedural justice was not

related to the frequency of official offending at three months based on the use of a more stringent  $p < .01$  value, which was employed due to the non-normality of this variable. Procedural justice was not related to any of the offending variables at six months (recall that these variables capture offending between the three and six month follow-ups, as opposed to over the entire six month period). As such, subsequent mediational analyses were undertaken only for the three month, self-reported offending frequency variables.

--Insert Table 5 about here--

### **Do Legitimacy Beliefs Mediate the Relationship Between Procedural Justice and Offending?**

As described above, the first step of mediation—that the independent variable predicts the dependent variable—was met for self-reported offending frequency (total, income, and violent) at three months. The second requirement of the causal steps strategy for testing mediation is that a direct effect exists between the independent variable and the mediator variable. As such, a regression was used to examine whether procedural justice (X) predicted legitimacy (M). Results indicated that procedural justice was strongly and positively predictive of legitimacy,  $\beta = .76$ ,  $t(90) = 11.24$ ,  $p < .01$ , 95% CI [.61, .87] allowing analyses to continue.

The third requirement of the causal steps strategy is that a direct effect exists between the mediator variable and the dependent variable, when controlling for the independent variable. The third set of regression analyses thus examined whether legitimacy (M) predicted each of the self-reported offending frequency variables at three months (Y) when controlling for procedural justice (X). Results from hierarchical regression analyses indicated that legitimacy did not predict total self-reported offending, self-reported income offending, or self-reported violent offending at three months when controlling for the predictive power of procedural justice (Table 6).<sup>3</sup> This suggested that legitimacy did not mediate the relationship between procedural justice and offending.

--Insert Table 6 about here--

To confirm this finding, Sobel's test was employed. The true indirect effect of procedural justice on self-reported total offending at three months via legitimacy beliefs was estimated, with bootstrapping, to lie between  $-.712$  and  $.180$ . Given that zero was contained within the 95% confidence interval, Sobel's test aligns with the causal steps finding and suggests that mediation did not occur. Likewise, the indirect effect of procedural justice on self-reported income and violent offending at three months via legitimacy was estimated to lie between  $-.689$  and  $.080$ , and between  $-.432$  and  $.393$ , respectively. As such, in all three cases, the indirect effect of procedural justice on offending via the mediator, legitimacy, was not significantly different from 0 at  $p < .05$ , indicating that the total effect of procedural justice on self-reported offending is not better accounted for by the proposed mediational model.

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<sup>3</sup> Note that, although Procedural Justice Scale and Legitimacy Scale scores were strongly correlated,  $r = .67$ ,  $p < .01$ , collinearity diagnostic tests indicated no multicollinearity problems in this regression equation (tolerance = .42, VIF = 2.36).

## **Does Procedural Justice Continue to Predict Offending When Controlling for Other Risk Factors?**

The next analyses was undertaken to determine whether procedural justice continued to be associated with offending frequency even after the predictive power of well-known risk factors for offending was accounted for. Given that legitimacy did not mediate the relationship between procedural justice and offending, in contrast to predictions, this construct was eliminated from analyses.

First, it was necessary to determine whether the chosen risk factors (psychopathic personality characteristics, substance use problems, delinquent peers, and age at first arrest) were related to offending in the current sample of youth on probation. Correlational analyses indicated that all four risk factors were associated with self-reported total offending and violent offending at three months, and that self-reported income offending was associated with the presence of delinquent peers, psychopathic features, and alcohol/drug use, but not age at first arrest (Table 7). Subsequent hierarchical regression analyses only included variables that were significantly correlated with the offending type of interest.

--Insert Table 7 about here--

Hierarchical multiple regression analyses examined whether procedural justice added unique predictive power to models in which risk factors for offending were controlled. For the three month follow-up, the risk factors associated with each self-reported offending outcome variable were, in combination, significantly predictive of offending in all three cases (self-reported total, income, and violent offending). However, procedural justice contributed unique predictive power across the models even after controlling for the other risk factors for offending. As can be seen in Table 8, age at first arrest, PCL-YV scores, MAYSI-2 Alcohol-Drug Use scores, and Delinquent Peers scale scores together accounted for 35.7% of the variability in total self-reported offending, while procedural justice scores in isolation accounted for an additional 8.3% of the variability. Similarly, PCL-YV scores, MAYSI-2 Alcohol-Drug Use scores, and Delinquent Peers scale scores together accounted for 27.8% of the variability in self-reported income offending, with youths' scores on the Procedural Justice Scale adding 4.8%. Finally, youths' age at first arrest, PCL-YV scores, MAYSI-2 Drug/Alcohol Use scores, and Delinquent Peers scale scores together accounted for 29.1% of the variability in self-reported violent offending, and Procedural Justice Scale scores accounted for an additional 7.2% of unique variability.

--Insert Table 8 about here--

## **Discussion**

The purpose of the current study was to gain a better understanding of the influence of procedural justice and legitimacy on offending in a sample of youth on probation. Specifically, it aimed to determine whether procedural justice predicted levels of offending at zero-to-three and three-to-six month time frames, and whether legitimacy mediated this relationship. The current study also sought to examine whether procedural justice and legitimacy continued to be associated with offending after the predictive power of other, well-established risk factors for offending were included in analyses.

### **Does Procedural Justice Predict Offending?**

Results partially supported this study's first hypothesis, which was that procedural justice would predict offending at zero-to-three and three-to-six months. Linear regression analyses demonstrated that procedural justice was significantly and inversely associated with self-reported total offending, income offending, and violent offending at the three month follow-up period. Procedural justice was also related to offending at three months when this variable was dichotomized (no offending vs. offending) based on both official and self-reports. These findings converge with the one available previous study that found that procedural justice ratings predicted custodial behavioral infractions two weeks later (Harvell, 2009). Procedural justice was not related to frequency of official offending, operationalized as a youths' total number of official charges in the previous three months. This is perhaps unsurprising given that self-reported and official offending were uncorrelated and that, when both self-reported and official offending data were available, self-reported offending exceeded official offending 70% of the time. Only 24% of youth for whom data were available had any official report of offending, whereas 70% of youth self-reported at least one instance of offending. These data align with previous research suggesting that youth are caught and charged for only a small proportion of the crimes they actually commit (Brame, Fagan, Piquero, Schubert, & Steinberg, 2004; Cohen, 1986; Farrington et al., 2007; Kirk, 2006).

In contrast to hypotheses, procedural justice was not related to the dichotomized offending variable or to official or self-reported frequency of offending at three-to-six months. These results are consistent with the Pathways to Desistance study (Fagan & Piquero, 2007), in which youth were interviewed at six month intervals over two years and no association was found between procedural justice and offending. It appears that the effects of experiences of procedural justice on offending behavior wane for youth, whereas it may have more lasting effects on adult behavior. This lends further weight to the notion that adolescents are qualitatively different from adults and highlights the need for developmentally-sensitive models of procedural justice. For example, it may be that procedural justice has a more temporary effect on offending behavior in youth because their behavior and opinions are more easily swayed by peers (e.g., Gardner & Steinberg, 2005). Alternatively, it may be that, because youths' attitudes and beliefs are generally less stable than those of adults (Alwin and Krosnick, 1991; Vollebergh, Iedema, & Raaijmakers, 2001), and because they tend to be present-focused, youth forget or disregard past experiences of procedural justice and focus primarily on the fairness of their treatment in their most recent experiences with justice officials. In this way, experiences of procedural fairness may cease to have an effect on youths' behavior beyond three months because subsequent experiences of fairness or unfairness with justice officials in the interim are more salient. Whatever the case, it is worthwhile to consider why effects of procedural justice on behavior might be more time-limited for youth than adults.

The current study is the first to our knowledge to demonstrate that procedural justice is associated with offending in a sample of young offenders, and it additionally shows that procedural justice has an effect on youths' offending for three months. This supports the proposition that procedural justice has the power to influence young offenders' risk for recidivism.

### **Do Legitimacy Beliefs Mediate the Relationship Between Procedural Justice and Offending?**

Although procedural justice predicted offending at three months and also predicted legitimacy (the first two requirements of Baron and Kenny's [1986] mediational analyses), legitimacy did not predict self-reported offending at three months when controlling for procedural justice. These results suggest that legitimacy does not fully or partially mediate the relationship between procedural justice and offending. While this relationship has been hypothesized for over a decade (Tyler, 1997, 2003), and while many researchers have demonstrated links between each of these constructs individually, this study was the first to directly test a full mediational model using a population of youth and with offending as an outcome measure. There have only been a small handful of studies examining procedural justice and legitimacy in youth at all. This is despite the theoretically heightened importance of these constructs to adolescents, who are still in the process of developing beliefs and attitudes toward the law and legal authorities (legal socialization).

The results of the current study strongly support the notion that procedural justice and legitimacy are related, as has been found in a wide variety of studies with adults as well as some studies with youth (Fagan & Tyler, 2005; Harvell, 2009; Hinds, 2007; Kaasa et al., 2008; Piquero et al., 2005; Reisig & Lloyd, 2009). Whereas these previous studies examined the relationship between experiences of procedural justice in the context of particular justice system players (e.g., police), the current study suggests that this relationship exists when tapping youths' experiences with the justice system as a whole as well (i.e., with police, judges, lawyers, & probation officers). That is, circumscribed experiences of fair treatment with justice system players are related to and may impact youths' global beliefs about the legitimacy of the law and legal authorities. This finding represents additional convergent evidence that the manner in which youth are treated has the power to influence their sense of obligation to obey the law and the extent to which they support the justice system.

### **Does Procedural Justice Continue to Predict Offending When Controlling for Other Risk Factors?**

When controlling for the predictive power of documented risk factors for offending (i.e., age at first contact with the law, substance use problems, peer delinquency, and features of psychopathy), procedural justice continued to have a significant and unique relationship with self-reported offending at three months. Notably, only some of these risk factors had a unique relationship with offending over and above their combined predictive power. In contrast, procedural justice made a unique contribution to the hierarchical regression models in all three cases and its impact was relatively equivalent to that of the other risk factors. For example, in the hierarchical regression that examined total self-reported offending frequency, the four risk factors accounted for 35.7% of the variance in offending, and procedural justice accounted for an additional 8.3% of variance on its own.

The lack of control for risk factors for offending in procedural justice research is a major limitation of this literature. While studies normally examine whether demographic variables influence observed relationships between procedural justice and offending, no studies to date have examined whether the impact of procedural justice on offending is unique, or whether it is accounted for by the presence of well-known risk factors.

## Limitations

Although the current study addressed some gaps in the literature on procedural justice, legitimacy, and offending in youth, there are some limitations worth noting. First, although recidivism was measured longitudinally, procedural justice and legitimacy were measured concurrently. As such, the causal relationship between procedural justice and legitimacy cannot be fully determined. While there are conceptual reasons to believe that procedural justice influences legitimacy and also some empirical evidence to this effect (e.g., Tyler, 2006b), it is also possible that individuals who believe more strongly in the legitimacy of the law are predisposed to believe they were fairly treated by justice officials. Further research examining how these two variables interact over time will help to clarify this relationship.

Although the lack of a widely used and agreed-upon measure of procedural justice is another potential limitation of research in this field, this drawback was tempered as much as possible in the current study. For example, the tools used in the current study were altered only slightly from their original versions, and the use of a secondary procedural justice measure allowed for a demonstration of concurrent validity. The measure used was also found to be internally consistent.

The sample in our study also suffered from a relatively small sample size as well as some attrition. In terms of attrition, seven youth were lost between the baseline and three month interviews, and an additional 12 youth were lost between the three and six month interviews. While we tried to mitigate these losses as much as possible by relying on both self-report as well as official data (i.e., so that we would still have some data for youth who did not want to complete the interview) the difficulty we faced retaining these youth remains. Despite this difficulty, there were no differences between those youth who dropped out and those who remained, based on available variables, and the sample we obtained had a similar ethnic and gender composition to juvenile justice-involved youth in Canada more generally.

## Implications

First and most importantly, this is the first study (to our knowledge) to demonstrate that youths' experiences of procedural justice are related to likelihood of future offending. Not only does this suggest that youths' decisions to reoffend may be shaped, in part, by the behavior of legal authorities, it may also have more far-reaching implications. Most adult offenders began offending during adolescence (Gomez-Smith & Piquero, 2005) and youth are still in the process of legal socialization—that is, they are still developing their attitudes towards the law and legal authorities as well as toward offending. The malleability of adolescents' legal attitudes, in combination with the fact that they are sensitive to issues of fairness and respect, may mean that perceptions of fairness in justice system proceedings during this stage of life may impact their compliance with the law as adults. Although the current study did not find an association between procedural justice and offending at six months, research with adults suggests that the relationship between procedural justice and offending may become more long-lasting with age (Paternoster et al., 1997; Pruitt et al., 1993). It is also possible that cumulative experiences of procedural justice may impact youths' perceptions of legal authorities and their overall rates of offending.

Thus, rather than focusing on costly punitive strategies to deter crime, this research suggests that simple alterations in the manner in which young offenders are treated may lead to changes in their attitudes toward the law and offending. For example, implementing standardized procedures to ensure that youth are given an opportunity to voice their opinions may help to increase their sense of participation in their proceedings, and thus increase their sense of procedural justice. For legal authorities working with youth, this research also indicates the effects of procedural justice on offending may not be long lasting. That is, whatever alterations are made to the justice system to increase youths' experiences of procedural justice, they must be made consistently—across settings and individuals—for the desired effect of reduced recidivism to take place.

Further, this study suggests that the relationship between procedural justice and offending is unique and not accounted for by the presence of well-known risk factors for offending. That is, the relationship between youths' experiences of procedural justice and offending three months later is not a spurious one better explained by the confounding effects of individual difference variables like psychopathy, delinquent peers, substance use issues, or an earlier age at first arrest. This lends further weight to the notion that targeting youths' experiences of procedural justice may be an effective, cost-efficient way of reducing recidivism in this population. However, this does not discount the possibility that other confounds might account for the observed relationship. While research aimed at understanding the complex relationship between youths' perceptions of fairness and their subsequent behavior are of value, it is equally important to remember that many other variables may be influencing youth and their subjective evaluation of their treatment. Further research into the relationship between procedural justice, risk factors for offending, and personality variables is needed to better understand how procedural justice interacts with intra-individual as well as environmental factors to produce its effect on offending.

Although legitimacy and procedural justice were strongly correlated, the current study failed to find evidence that legitimacy accounted for the observed relationship between procedural justice and offending in youth. This is in contrast to one previous study, which found that legitimacy mediated the relationship between procedural justice and youths' self-reported willingness to cooperate with police (Murphy & Gaylor, 2010), and in contrast to accepted theory. One explanation for this discrepancy may be the outcome measure used: offending vs. willingness to comply with police. It is possible that legitimacy beliefs mediate the relationship between procedural justice and the way youth believe that they *should* behave, but not the way that they actually behave. Alternatively, the difference between the outcome of Murphy and Gaylor's study and the current study may be a statistical one given that those authors used a slightly different method for testing mediation. Either way, further research exploring the role of legitimacy in the relationship between procedural justice and offending is clearly warranted given the paucity of studies that currently exist and the lack of consensus between them.

In sum, the present study demonstrates that youth who experience the justice system as fair may be less likely to reoffend, even when other factors related to recidivism are taken into account. For legal and justice professionals, these findings indicate that it is important to treat adolescents impartially and respectfully, enhance their sense of trust in the justice system, and provide them with opportunities to participate in their proceedings. These factors might be taken into account when developing training programs for justice officials, modifying justice system



procedures, etc. For researchers, these findings emphasize the need for further research, particularly studies that take a developmental perspective and attempt to better understand the mechanisms by which procedural justice influences rates of reoffending. Clearly, results from studies of adults do not consistently generalize to adolescents, and researchers need to examine procedural justice across the lifespan to fully understand how this construct functions throughout development.

### References

- Alwin, D. F., & Krosnick, J. A. (1991). Aging, cohorts, and the stability of sociopolitical orientations over the life span. *American Journal of Sociology*, *97*, 169–195. Retrieved from <http://jstor.org/stable/2781642>
- Archer, R. P., Stredny, R. V., Mason, J. A., & Arnau, R. C. (2004). An examination and replication of the psychometric properties of the Massachusetts Youth Screening Instrument-Second Edition (MAYSI-2) among adolescents in detention settings. *Assessment*, *11*, 290-302. doi:10.1177/1073191104269863
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173-1182. doi:10.1037/0022-3514.51.6.1173
- Brame, R., Fagan, J., Piquero, A. R., Schubert, C. A., & Steinberg, L. (2004). Criminal careers of serious delinquents in two cities. *Youth Violence and Juvenile Justice*, *2*, 256-272. doi:10.1177/1541204004265877
- Brandt, J. R., Wallace, A. K., Patrick, C. J., & Curtin, J. J. (1997). Assessment of psychopathy in a population of incarcerated adolescent offenders. *Psychological Assessment*, *9*, 429–435. doi:10.1037/1040-3590.9.4.429
- Calverley, D., Cotter, A., & Halla, E. (2010). Youth custody and community services in Canada, 2008/2009. *Juristat*, *30*, 1-35.
- Cohen, J. (1986). Research on criminal careers: Individual frequency rates and offense seriousness. In A. Blumstein, J. Cohen, J. A. Roth, & C. A. Visher (Eds.), *Criminal careers and career criminals, Volume 1* (pp. 292-418). Washington, DC: National Academy Press.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Corrado, R. R., Vincent, G. M., Hart, S. D. & Cohen, I. M. (2004). Predictive validity of the Psychopathy Checklist: Youth Version for general and violent recidivism. *Behavioral Sciences and the Law*, *22*, 5-22. doi:10.1002/bsl.574
- Cottle, C. C., Lee, R. J., & Heilbrun, K. (2001). The prediction of criminal recidivism in juveniles: A meta-analysis. *Criminal Justice and Behavior*, *28*, 367-394. doi:0.1177/0093854801028003005
- Cronbach, L. J. (1990). *Essentials of psychological testing*. New York: Harper-Collins.
- Dahlberg, L. L. & Simon, T. R. (2006). Predicting and preventing youth violence: Developmental pathways and risk. In J. R. Lutzker (Ed.), *Preventing violence: Research and evidence-based intervention strategies* (pp. 97-124). Washington, DC: American Psychological Association.
- Douglas, K. S., Epstein, M. E., & Poythress, N. G. (2008). Criminal recidivism among juvenile offenders: Evaluating the incremental and predictive validity of three measures of psychopathic features. *Law and Human Behavior*, *32*, 423-438. doi:10.1007/s10979-007-9114-8
- Edens, J., Campbell, J., & Weir, J. (2007). Youth psychopathy and criminal recidivism: A meta-analysis of the psychopathy checklist measures. *Law and Human Behavior*, *31*, 53–75. doi:10.1007/s10979-006-9019-y
- Elliott, D. S., & Menard, S. (1996). Delinquent friends and delinquent behavior: Temporal and developmental patterns. In J. D. Hawkins (Ed.), *Delinquency and crime: Current theories* (pp. 28-67). Cambridge, UK: Cambridge University Press.

- Fagan, J., & Piquero, A. R. (2007). Rational choice and developmental influences on recidivism among adolescent felony offenders. *Journal of Empirical Legal Studies*, 4, 715-748. doi:10.1111/j.1740-1461.2007.00105.x
- Fagan, J., & Tyler, T. R. (2005). Legal socialization of children and adolescents. *Social Justice Research*, 18, 217-242. doi: 10.1007/s11211-005-6823-3
- Farrington, D. P. (2003). Developmental and life-course criminology: Key theoretical and empirical issues—the 2002 Sutherland Award Address. *Criminology*, 41, 221-255. doi:10.1111/j.1745-9125.2003.tb00987.x
- Farrington, D. P., Jolliffe, D., Loeber, R., & Homish, D. L. (2007). How many offenses are really committed per juvenile court offender? *Victims and Offenders*, 2, 227-249. doi:10.1080/15564880701403934
- Forth, A. E., Kosson, D. S., Hare, R. D. (2003). *The Hare Psychopathy Checklist: Youth Version*. Toronto: Multi-health Systems.
- Fried, C., & Reppucci, N. D. (2002). Adolescent violence: Correlates, interventions and legal implications. In B. Bottoms, M. Kovera, & B. McAuliff (Eds.), *Children, social science, and the law* (pp. 233-269). New York: Cambridge University Press.
- Gardner, M., & Steinberg, L. (2005). Peer influence on risk taking, risk preference, and risky decision making in adolescence and adulthood: An experimental study. *Developmental Psychology*, 41, 625-635. doi:10.1037/0012-1649.41.4.625
- Gomez-Smith, Z., & Piquero, A. R. (2005). An examination of adult-onset offending. *Journal of Criminal Justice*, 33, 515-525. doi:10.1016/j.jcrimjus.2005.08.001
- Gretton, H., Hare, R. D., & Catchpole, R. (2004). Psychopathy and offending from adolescence to adulthood: A ten-year follow-up. *Journal of Consulting and Clinical Psychology*, 72, 636-645. doi:10.1002/bsl.574
- Gretton, H. M., McBride, M., Hare, R. D., O'Shaughnessy, R., & Kumka, G. (2001). Psychopathy and recidivism in adolescent sex offenders. *Criminal Justice and Behavior*, 28, 427-449. doi:10.1177/009385480102800403
- Grisso, T. (2004). *Double jeopardy: Adolescent offenders with mental disorders*. Chicago, IL: The University of Chicago Press.
- Grisso, T., & Barnum, R. (2006). *Massachusetts youth screening instrument, youth version 2: User's manual and technical report*. Sarasota, FL: Professional Resource Press.
- Grisso, T., Barnum, R., Fletcher, K. E., Cauffman, E., & Peuschold, D. (2001). Massachusetts youth screening instrument for mental health needs of juvenile justice youths. *Journal of the American Academy of Child and Adolescent Psychiatry*, 40, 541-548. doi:10.1097/00004583-200105000-00013
- Harvell, S. A. S. (2009). *A developmental assessment of Procedural Justice: Does process matter to juvenile detainees?* (Unpublished dissertation). Georgetown University.
- Hinds, L. (2007). Building police-youth relationships: The importance of procedural justice. *Youth Justice*, 7, 195-209. doi:10.1177/1473225407082510
- Hinds, L. (2009). Youth, police legitimacy and informal contact. *Journal of Police and Criminal Psychology*, 24, 10-21. doi:10.1007/s11896-008-9031-x
- Holmbeck, G. N. (2002). Post-hoc probing of significant moderational and mediational effects in studies of pediatric populations. *Journal of Pediatric Psychology*, 27, 87-96. doi:10.1093/jpepsy/27.1.87

- Huizinga, D., Esbensen, F., & Weiher, A. (1991). Are there multiple paths to delinquency? *Journal of Criminal Law & Criminology*, 82, 83-118. Retrieved from <http://www.jstor.org/stable/1143790>
- Kaasa, S. O., Malloy, L. C., & Cauffman, E. (2008). Procedural justice and the adolescent offender. *Paper Presented at the Annual Meeting of the American Psychology-Law Society*, Jacksonville, FL.
- Kirk, D. S. (2006). Examining the divergence across self-report and official data sources on inferences about adolescent life-course of crime. *Journal of Quantitative Criminology*, 22, 107-129. doi:10.1007/s10940-006-9004-0
- Knight, G. P., Little, M., Losoya, S. H., & Mulvey, E. P. (2004). The self-report of offending among serious juvenile offenders: cross-gender, cross-ethnic/race measurement equivalence. *Youth Violence and Juvenile Justice*, 2, 273-295. doi:10.1177/1541204004265878
- Le, T. N., & Stockdale, G. D. (2005). Individualism, collectivism, and delinquency in Asian American adolescents. *Journal of Clinical Child & Adolescent Psychology*, 34, 681-691. doi:10.1207/s15374424jccp3404\_10
- Levi, M., Sacks, A., & Tyler, T. R. (2009). Conceptualizing Legitimacy, measuring legitimating beliefs. *American Behavioral Scientist*, 53, 354-375. doi:10.1177/0002764209338797
- Lind, E. A., & Tyler, T. R. (1988). *The social psychology of procedural justice*. New York: Plenum Press.
- Lipsey, M. W., & Derzon, J. H. (1998). Predictors of violent or serious delinquency in adolescence and early adulthood: A synthesis of longitudinal research. In R. Loeber & D. P. Farrington (Eds.), *Serious and violent juvenile offenders: Risk factors and successful interventions* (pp. 86-105). Thousand Oaks, CA: Sage.
- Lovell, D., Johnson, L. C., & Cain, K. C. (2007). Recidivism of supermax prisoners in Washington state. *Crime & Delinquency*, 53, 633-656. doi:10.1177/0011128706296466
- Luke, G., & Lind, B. (2002). Reducing juvenile crime: Conferencing versus court. Sydney: New South Wales Bureau of Crime Statistics and Research. Retrieved 15 March 2013, from [http://www.professionalstandardscouncil.gov.au/lawlink/bocsar/ll\\_bocsar.nsf/vwFiles/CJB69.pdf/\\$file/CJB69.pdf](http://www.professionalstandardscouncil.gov.au/lawlink/bocsar/ll_bocsar.nsf/vwFiles/CJB69.pdf/$file/CJB69.pdf)
- Lumley, T., Diehr, P., & Emerson, S. (2002). The importance of the normality assumption in large public health data sets. *Annual Review of Public Health*, 23, 151-169. doi:10.1146/annurev.publhealth.23.100901.140546
- MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, 7, 83-104. doi:10.1037/1082-989X.7.1.83
- Mastrofski, S.D., Snipes, J.B., & Supina, A. E. (1996). Compliance on demand: The public's response to specific police requests. *Journal of Research in Crime and Delinquency*, 33, 269-305. doi:10.1177/0022427896033003001
- McCluskey, J. D. (2003). *Police requests for compliance: Coercive and procedurally just tactics*. New York: LFB Scholarly Publishing.
- McCluskey, J. D., Mastrofski, S. D., & Parks, R. B. (1999). To acquiesce or rebel: Predicting citizen compliance with police requests. *Police Quarterly*, 2, 389-416. doi:10.1177/109861119900200401

- McGarrell, E. F. (2001). *Restorative justice conferences as an early response to young offenders*. Washington, DC: US Department of Justice, Office of Juvenile Justice and Delinquency Prevention.
- McGarrell, E. F., & Hipple, N. K. (2007). Family group conferencing and re-offending among first-time juvenile offenders: The Indianapolis Experiment. *Justice Quarterly*, *24*, 221-246. doi:10.1080/07418820701294789
- Moffitt, T. E., Caspi, A., Dickson, N., Silva, P., & Stanton, W. (1996). Childhood-onset versus adolescent-onset antisocial conduct problems in males: Natural history from ages 3-18 years. *Development and Psychopathology*, *8*, 399-424. doi:10.1017/S0954579400007161
- Murphy, K., & Gaylor, A. (July 2010). *Policing youth: Can procedural justice nurture youth cooperation with police?* Alfred Deakin Research Institute, Working Paper No. 6: Deakin University, Australia. Retrieved from <http://deakin.edu.au/research-services/forms/v/3087/adri-working-paper-06.pdf>
- Murphy, K., Hinds, L. & Fleming, J. (2008). Encouraging public cooperation and support for police. *Policing Society*, *18*, 136-155. doi: 10.1080/10439460802008660
- Nunnally, J. C. (1978). *Psychometric theory*. New York: McGraw-Hill.
- Osborne, J. (2002). Best practices in data transformation: The overlooked effect of minimum values. In J. Osborne (Ed.), *Best practices in quantitative methods* (pp. 197-204). Thousand Oaks, CA: Sage.
- Paternoster, R., Brame, R., Bachman, R., & Sherman, L. W. (1997). Do fair procedures matter? The effect of procedural justice on spouse assault. *Law and Society Review*, *31*, 163-204.
- Peterson-Badali, M., Care, S., & Broeking, J. (2007). Young people's perceptions and experiences of the lawyer-client relationship. *Canadian Journal of Criminology and Criminal Justice*, *49*, 375-401. doi:10.3138/cjccj.49.3.375
- Piquero, A. R., Fagan, J., Mulvey, E. P., Steinberg, L., & Odgers, C. (2005). Developmental trajectories of legal socialization among serious adolescent offenders. *The Journal of Criminal Law and Criminology*, *96*, 267-298.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, *36*, 717-731. doi:10.3758/BF03206553
- Pruitt, D. G., Peirce, R. S., McGillicuddy, N. B., Welton, G. L., & Castrianno, L. M. (1993). Long-term success in mediation. *Law and Human Behavior*, *17*, 313-30. doi:10.1007/BF01044511
- Reisig, M. D., Bratton, J. & Gertz, M. (2007). The construct validity and refinement of process-based policing measures. *Criminal Justice and Behavior*, *34*, 1005-1028. doi:10.1177/0093854807301275
- Reisig, M. D., & Lloyd, C. (2009). Procedural justice, police legitimacy, and helping the police fight crime: Results from a survey of Jamaican adolescents. *Police Quarterly*, *12*, 42-62. doi:10.1177/1098611108327311
- Reppucci, N. D., Fried, C. S., & Schmidt, M. G. (2002) Youth violence: RISK and protective factors. In R. R. Corrado, R. Roesch, & S. D. Hart (Eds.), *Multi-problem youth: A foundation for comparative research on needs, interventions, and outcomes* (pp. 3-22). Amsterdam: ISO Press.
- Salekin, R. T. (2008). Psychopathy and recidivism from mid-adolescence to young adulthood: Cumulating legal problems and limiting life opportunities. *Journal of Abnormal Psychology*, *117*, 386-395. doi:10.1037/0021-843X.117.2.386

- Sherman, L., & Barnes, G. (1997). *Restorative justice and offenders' respect for the law*. RISE Working Paper #3. Canberra: Australian National University.
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological methodology* (pp. 290-312). San Francisco: Jossey-Bass.
- Sunshine, J., & Tyler, T. R. (2003). The role of procedural justice and legitimacy in shaping public support for policing. *Law and Society Review*, *37*, 513-548. doi:10.1111/1540-5893.3703002
- Thornberry, T. P., Lizotte, A. J., Krohn, M. D., Farnworth, M., & Jang, S. J. (1994). Delinquent peers, beliefs, and delinquent behavior: A longitudinal test of interactional theory. *Criminology*, *32*, 47-83. doi:10.1111/j.1745-9125.1994.tb01146.x
- Tyler, T. R. (1997). The psychology of legitimacy: A relational perspective on voluntary deference to authorities. *Personality and Social Psychology Review*, *1*, 323-345. doi:10.1207/s15327957pspr0104\_4
- Tyler, T. R. (2000). Social justice: Outcome and procedure. *International Journal of Psychology*, *35*, 117-125. doi:10.1080/002075900399411
- Tyler, T. R. (2003). Procedural justice, legitimacy, and the effective rule of law. *Crime and Justice*, *30*, 283-357. Retrieved from <http://www.jstor.org/stable/1147701>
- Tyler, T. R. (2006a). *Why people obey the law*. Princeton, NJ: Princeton University Press.
- Tyler, T. R. (2006b). Psychological perspectives on legitimacy and legitimation. *Annual Review of Psychology*, *57*, 375-400. doi:10.1146/annurev.psych.57.102904.190038
- Tyler, T. R., & Huo, Y. J. (2002). *Trust in the law: Encouraging public cooperation with the police and courts*. New York: Russell Sage Foundation.
- Tyler, T. R., Sherman, L. W., Strang, H., Barnes, G. C., & Woods, D. (2007). Reintegrative shaming, procedural justice, and recidivism: The engagement of offenders' psychological mechanisms in the Canberra RISE drinking-and-driving experiment. *Law and Society Review*, *41*, 553-586. doi:10.1111/j.1540-5893.2007.00314.x
- Tyler, T. R. & Wakslak, C. (2004). Profiling and police legitimacy: Procedural justice, attributions of motive, and acceptance of police authority. *Criminology*, *42*, 253-281. doi:10.1111/j.1745-9125.2004.tb00520.x
- Vaughn, M. G., Litschge, C., DeLisi, M., Beaver, K. M., & McMillen, C. J. (2008). Psychopathic personality features and risks for criminal justice system involvement among emancipating foster youth. *Children and Youth Services Review*, *30*, 1101-1110. doi:10.1016/j.childyouth.2008.02.001
- Vincent, G. M., Odgers, C. L., McCormick, A. V., & Corrado, R. R. (2008). The PCL: YV and recidivism in male and female juveniles: A follow-up into young adulthood. *International Journal of Law and Psychiatry*, *31*, 287-296. doi:10.1016/j.ijlp.2008.04.012
- Vincent, G. M., Vitacco, M. J., Grisso, T., & Corrado, R. R. (2003). Subtypes of adolescent offenders: Affective traits and antisocial behavior patterns. *Behavioral Sciences and the Law*, *21*, 1-18. doi:10.1002/bsl.556
- Vollebergh, W. A. M., Iedema, J., & Raaijmakers, Q. A. W. (2001). Intergenerational transmission and the formation of cultural orientations in adolescence and young adulthood. *Journal of Marriage and Family*, *63*, 1185-1198. doi:10.1111/j.1741-3737.2001.01185.x

- Wells, W. (2007). Type of contact and evaluations of police officers: the effects of procedural justice across three types of police-citizen contacts. *Journal of Criminal Justice*, 35, 612-621. doi:10.1016/j.jcrimjus.2007.09.006
- Woolard, J. L., Harvell, S. A. S., & Graham, S. (2008). Anticipatory injustice among adolescents: Age and racial/ethnic differences in perceived unfairness of the justice system. *Behavioral Sciences & the Law*, 26, 207-226. doi:10.1002/bsl.805

## Appendix

### Youth Justice System Procedural Justice Scale

*In my experience with the juvenile justice system generally (that is, with police, lawyers, judges, in court, and with probation officers)...*

1. I was given the chance to express my opinions and feelings
2. I was given the opportunity to describe my situation before decisions were made about how to handle it.
3. What I said about my case was taken into account in deciding what should be done.
4. I had enough of a chance to say what I wanted to say about my case.
5. I felt I had influence over decisions made about me.
6. I was treated politely.
7. Concern was shown for my rights.
8. I was treated with dignity and respect.
9. I was respected as a person.
10. People in the justice system, like my lawyer, the police, my judge, or my probation officer, thought they were much better than me.
11. I was treated the same way that anyone else in the same situation would have been treated.
12. The law was enforced fairly.

*People in the justice system, like the police, lawyers, the judge, or my probation officer...*

13. ...had opinions about me before getting to know me.
14. ...made decisions about me based on facts, not personal biases and opinions.
15. ...had personal opinions and attitudes that affected the way they treated me (R).
16. ...were honest with me.
17. ...gave me honest explanations for their actions.
18. ...followed through on the promises they made.
19. ...tried hard to do the right thing by me.
20. ...tried to take my needs into account



## Youth Justice System Legitimacy Scale

*Please state how much you agree or disagree with the following statements:*

1. People should obey the law even if it goes against what they think is right.
2. I always try to obey the law even if I think it is wrong
3. Disobeying the law is seldom justified.
4. It is difficult to break the law and keep one's self-respect.
5. A person who refuses to obey the law is a danger to society.
6. Obedience and respect for authority are the most important things children should learn.
7. I have a great deal of respect for justice officials (*e.g. policemen, probation officers, judges, lawyers*).
8. On the whole, justice officials (*e.g. policemen, probation officers, judges, lawyers*) are honest.
9. I feel proud of the justice officials (*e.g. policemen, probation officers, judges, lawyers*) in BC.
10. I support our justice officials (*e.g. policemen, probation officers, judges, lawyers*).
11. The courts generally guarantee everyone a fair trial.
12. The basic rights of citizens are well-protected in the courts.
13. Court decisions are almost always fair.

Figure 1

*Flow chart of procedures by which youth on probation were recruited and enrolled in the study*

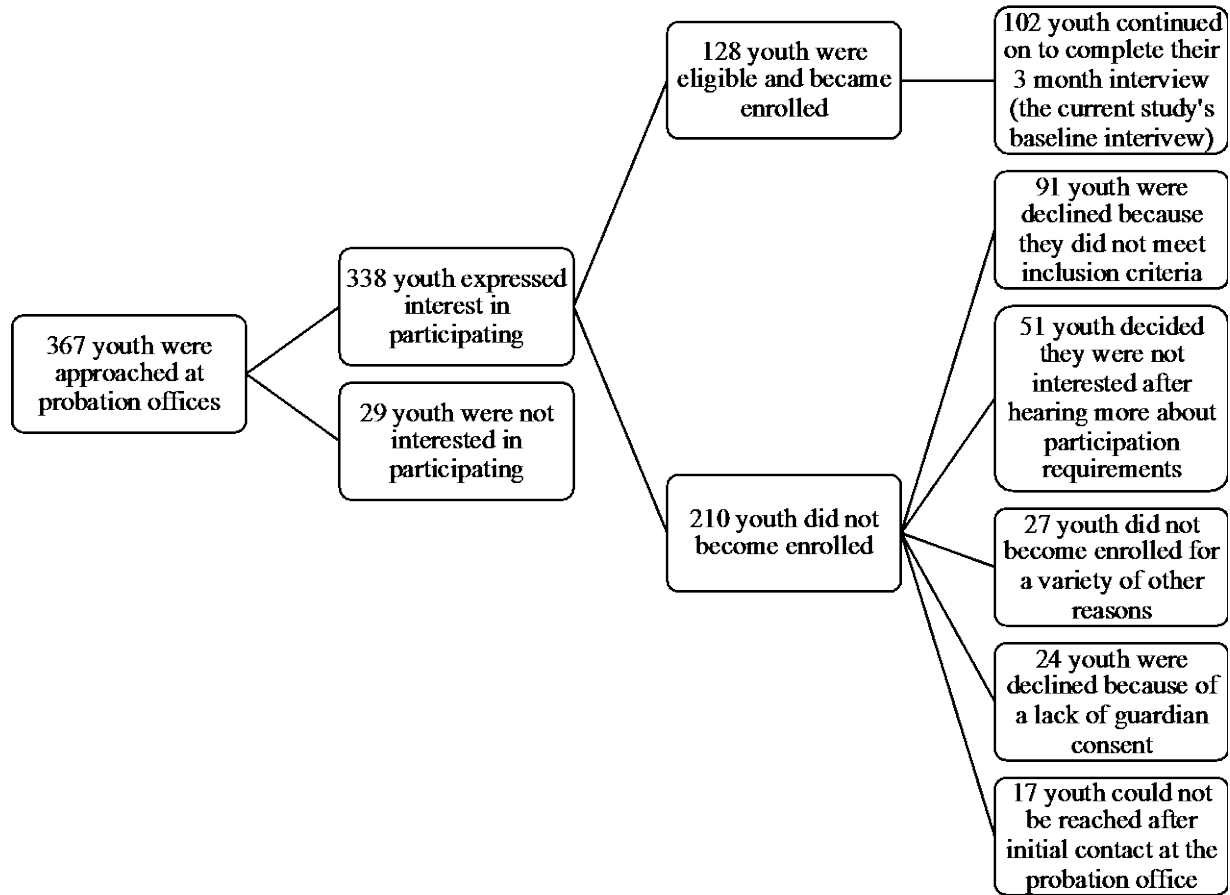


Table 1

*Demographic characteristics*

	<i>N</i>	<i>%</i>	<i>M</i>	<i>SD</i>
Age (years)	92	100.00	15.87	1.21
Gender				
Male	67	72.83		
Female	25	27.17		
Ethnicity				
Caucasian	39	42.39		
Aboriginal	30	32.61		
Mixed/Other	23	25.00		
Number of Index Charges			2.51	2.09
Number of Index Convictions			1.97	1.65
Type of Index Charges				
Violent Offense	85	37.61		
Property Offense	38	16.81		
Breach/Failure to Comply	59	26.11		
Weapons Offense	14	6.91		
Drug Offense	5	2.21		
Mischief	12	5.31		
Arson	3	1.33		
Other	10	4.42		
# of Previous Charges			1.61	3.41
# of Previous Convictions			0.75	1.71
# of Months on Probation			9.30	5.44

Table 2

*Descriptive characteristics of measures<sup>a</sup>*

	<i>M</i>	<i>SD</i>
Procedural Justice Scale	2.63	0.55
Legitimacy Scale	2.46	0.53
Age at First Contact with the Law	13.2 years	2.11 years
Delinquent Peers	1.77	0.74
MAYSI-2 Alcohol/Drug Use	3.45	2.75
PCL-YV Total Scores	15.77	7.30
PCL-YV Subscales		
Interpersonal	1.83	1.89
Affective	2.90	2.05
Lifestyle	4.52	2.08
Antisocial tendencies	5.55	2.50

<sup>a</sup>Note: higher scores indicate greater perceived procedural justice and legitimacy, more mental health symptoms (i.e., more “yes” responses), and more psychopathic characteristics.

Table 3

*Offending descriptive data*

	<i>N</i>	<i>%</i>	<i>M</i>	<i>SD</i>	<i>N Offended (%)</i>	<i>Coefficient Alpha</i>
<b>3 Month Follow-Up</b>						
Offending dichotomized (self-report and official)	85	92.4			58 (68.2)	
Total SR <sup>a</sup> Offending	75	81.5	6.52	12.09	52 (69.3)	.95
SR Income Offending	75	81.5	3.12	5.12	44 (58.7)	.86
SR Violent Offending	75	81.5	2.96	6.29	34 (45.3)	.92
Total Official Offending	71	77.2	0.63	1.56	19 (26.8)	
<b>6 Month Follow-Up</b>						
Offending dichotomized (self-report and official)	73	80.4			48 (65.8)	
Total SR Offending	65	70.7	4.77	6.80	42 (64.6)	.82
SR Income Offending	65	70.7	2.63	2.63	34 (52.3)	.71
SR Violent Offending	65	70.7	1.75	3.13	29 (44.6)	.80
Total Official Offending	50	54.3	.90	1.90	14 (28.0)	

<sup>a</sup> SR = self-reported

Table 4

*Comparison of offending data (self-report vs. official record)*

	<i>3 Month</i>		<i>6 Month</i>	
	<i>Follow-up</i>		<i>Follow-up</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Self-reported and official offending were the same	16	17.4	11	12.0
Self-reported offending exceeded official offending	42	45.7	30	32.6
Official offending exceeded self-reported offending	2	2.2	1	1.1
Only official report was available	10	10.9	8	8.7
Only self-reported offending was available	15	16.3	23	25.0
Neither were available	7	7.6	19	20.7

Table 5

*Linear regressions with procedural justice as the independent variable*

Offending Type <sup>a</sup>	3 Month Follow-up Period			6 Month Follow-up Period		
	<i>b</i> [95% CIs]	<i>SE</i> ( <i>b</i> )	$\beta$	<i>b</i> [95% CIs]	<i>SE</i> ( <i>b</i> )	$\beta$
Total SR <sup>b</sup> Offending	-.93 [-1.40, -.51]	.21	-.46**	-.05 [-.55, .46]	.25	-.02
SR Income Offending	-.63 [-1.10, -.27]	.18	-.37**	.01 [-.43, .45]	.29	.01
SR Violent Offending	-.71 [-1.08, -.33]	.19	-.40**	.02 [-.35, .38]	.18	.01
Total Official Offending	-.25 [-.47, -.03]	.11	-.26*	.06 [-.26, .37]	.15	.05

<sup>a</sup> Scores were transformed using a natural logarithm; <sup>b</sup> SR = self-reported; \* $p < .05$ , \*\* $p < .01$

Table 6

*Hierarchical regressions with legitimacy as the independent variable, controlling for procedural justice, at three months*

Offending Type <sup>a</sup>	Step 1 Procedural Justice		Step 2 Legitimacy			
	$\beta$	R2	$b$ [95% CIs]	SE $b$	$\beta$	$\Delta R2$
Total SR <sup>b</sup> Offending	-.46	.21**	-.35 [-1.06, .31]	.33	-.17	.012
SR Income Offending	-.37	.14**	-.35 [-.94, .20]	.28	-.21	.020
SR Violent Offending	-.40	.16**	.01 [-.65, .53]	.29	.00	.000

<sup>a</sup> Scores were transformed using a natural logarithm; <sup>b</sup> SR = self-reported; \* $p < .05$ , \*\* $p < .01$



Table 7

*Correlations between risk factors for offending and offending variables at three months*

Offending Type <sup>a</sup>	<i>Risk Factors for Offending</i>			
	<i>Age at First Arrest</i>	<i>PCL-YV total scores</i>	<i>Alcohol/Drug Use (MAYSI-2)</i>	<i>Delinquent Peers Scale</i>
3 Month Follow-Up				
Total SR <sup>b</sup> Offending	-.24*	.38**	.47**	.47**
SR Income Offending	-.12	.28*	.39**	.48**
SR Violent Offending	-.35**	.45**	.37**	.26*
Total Official Offending	-.36**	.15	.30*	.14

<sup>a</sup> Scores were transformed using a natural logarithm; <sup>b</sup> SR = self-reported; \* $p < .05$ , \*\* $p < .01$

Table 8

*Hierarchical regressions with risk factors for offending and procedural justice as independent variables*

Offending Type <sup>a</sup>	<i>Risk Factors for Offending: Step 1</i>				<i>R</i> <sup>2</sup>
	<i>Age at First Arrest</i>	<i>PCL-YV total score</i>	<i>Alcohol/Drug Use (MAYSI-2)</i>	<i>Delinquent Peers Scale</i>	
	<i>b [95% CIs]; β</i>	<i>b [95% CIs]; β</i>	<i>b [95% CIs]; β</i>	<i>b [95% CIs]; β</i>	
Total SR <sup>b</sup>	-.07 [-.18, .05]; -	.03 [-.01, .07];	.09 [-.02, .21];	.55 [.14, .96];	.36**
Offending	.13	.19	.21	.33**	
SR Income	--	.02 [-.01, .05];	.03 [-.06, .13];	.56 [.22, .90];	.28**
Offending		.17	.10	.41**	
SR Violent	-.11 [-.22, -.01];	.04 [.01, .07];	.06 [-.05, .16];	.17 [-.20, .53];	.29**
Offending	-.24*	.27*	.16	.12	
	<i>Step 2</i>				
	<i>Procedural Justice</i>	<i>ΔR</i> <sup>2</sup>			
	<i>b [95% CIs]; β</i>				
Total SR <sup>b</sup>	-.62 [-1.02, -.22]	.08**			
Offending	-.30**				
SR Income	-.38 [-.73, -.03];	.05*			
Offending	-.23*				
SR Violent	-.50 [-.86, -.13];	.07**			
Offending	-.28**				

<sup>a</sup> Scores were transformed using a natural logarithm; <sup>b</sup> SR = self-reported; \**p* < .05, \*\**p* < .01