On understanding inconsistent disciplinary behaviour in schools

Authors: Anton Bekkerman & Gregory Gilpin

This is an Accepted Manuscript of an article published in Applied Economics Letters in 2015, available online: http://www.tandfonline.com/10.1080/13504851.2014.978065.

Bekkerman, Anton, and Gregory Gilpin. "On understanding inconsistent disciplinary behaviour in schools." Applied Economics Letters 22, no. 10 (2015): 772-776.
DOI: https://dx.doi.org/10.1080/13504851.2014.978065.

Table 2. Descriptive statistics of disciplinary actions by student body demographics, in per cent

	Nonfirearm weapon	Illegal drugs	Alcohol	Physical altercations
Expulsion/transfer				
Black	58.1	51.0	30.2	21.9
Hispanic	53.2	42.0	26.5	15.6
White	43.3	39.3	21.6	12.3
Suspension, >5 days				
Black	31.9	37.9	52.6	51.4
Hispanic	30.4	30.8	32.8	32.4
White	40.8	44.2	52.0	43.7
Short-term discipline				
Black	9.9	11.2	17.2	26.7
Hispanic	16.4	27.1	40.7	52.0
White	15.9	16.6	26.4	44.1

Notes: 3200 nonalternative public high school observations. 'Black', 'Hispanic' and 'white' indicate the per cent of students disciplined by a particular punishment for one of the four misconducts in schools where the student body consists of at least 25% of black students, Hispanic students or white students, respectively. Discipline rankings among student body demographics did not change when the student body composition thresholds were altered between 10% and 50%.

community characteristics (X_{it}), and state and time fixed effects (δ_s and δ_t), which help capture state-level school discipline mandates and other consistencies across schools and over the sample period, and idiosyncratic error term (ε_{ijt}), that is,

$$d_{ijt}^{k} = \beta_0 + SB_{it}\beta_1 + X_{it}\beta_2 + \delta_s + \delta_t + \varepsilon_{ijt}\,. \qquad (1)$$

A school's use of a discipline k is bounded between 0% and 100%, where 0% indicates that discipline k is never used and 100% indicates that all students committing a certain offense are identically disciplined. Figure 1 shows estimated probability density functions for discipline ratios across the four offense categories, which provide empirical evidence of substantial mass at the 0% and 100% bounds and likely represents administrators at a school i consistently using the same discipline for certain offenses. Therefore, the observed proportion of discipline outcomes is characterized as

$$\begin{aligned} d_{ijt}^{k} &= 0 && \text{if } d_{ijt}^{k*} \leq 0 \\ d_{ijt}^{k} &= d_{ijt}^{k*} && \text{if } 0 < d_{ijt}^{k*} < 100 \\ d_{ijt}^{k} &= 100 && \text{if } d_{ijt}^{k*} \geq 100 \end{aligned} \qquad (2)$$

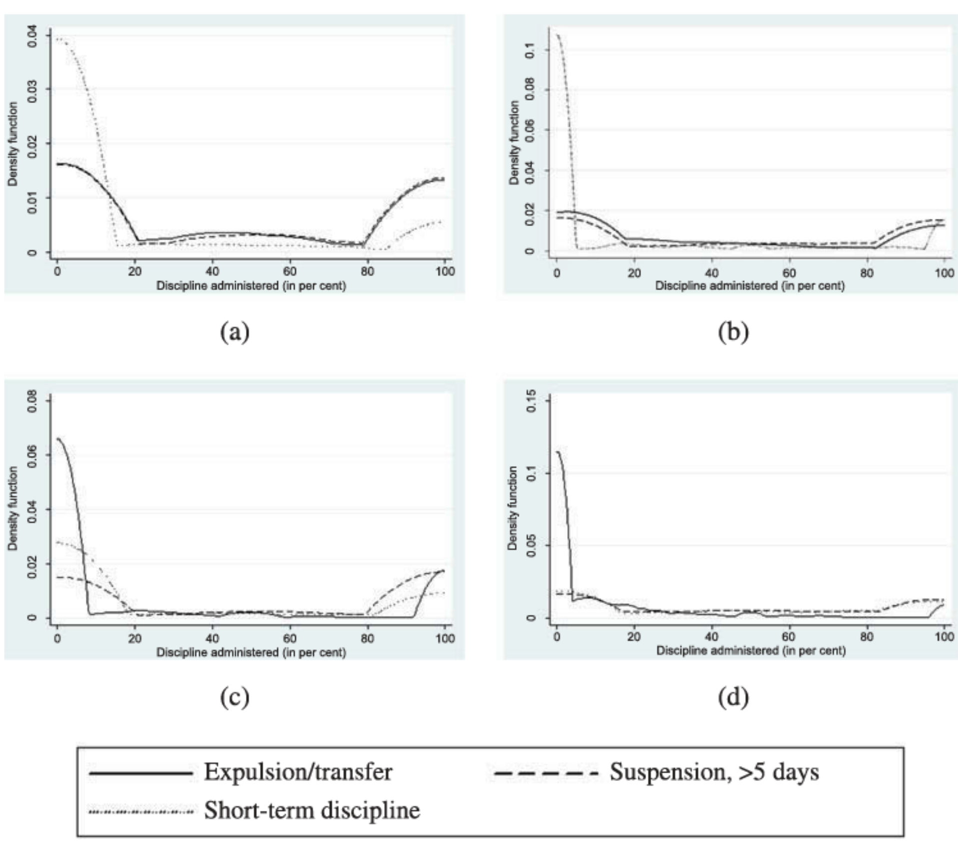

Fig. 1. Empirical probability density functions: (a) nonfirearm weapon, (b) illegal drugs, (c) alcohol and (d) physical altercations

where the unobserved latent discipline outcome is d_{ijt}^{k*}. A Tobit model with sampling weights provided by the SSOCS yields unbiased and consistent parameters estimates.

The Tobit model conveniently provides an opportunity to decompose marginal effects into conditional and unconditional elasticities between discipline outcomes and the variables of interest (McDonald and Moffitt, 1980), that is,

$$\varepsilon_j^k(C) = \frac{\partial E\left[0 < d_j^k < 1\right]}{\partial SB} \frac{SB}{E\left[0 < d_j^k < 1\right]} \tag{3a}$$

$$\varepsilon_j^k(UC) = \frac{\partial E\left[d_j^k\right]}{\partial SB} \frac{SB}{E\left[d_j^k\right]} \tag{3b}$$

The two elasticities differ in how the estimate conditions over the discipline outcome space. The conditional elasticity (Equation 3a) characterizes the impacts on disciplinary actions in schools where within-school variation exists in discipline k for misconduct j. The unconditional elasticity (Equation 3b) also includes information about schools that do not have within-school variation in a particular discipline.

III. Results

Table 3 presents estimates of the Tobit discipline model for the demographic variables of interest. The results show that discipline rates are affected by a school's student body racial composition. Discrepancies are manifest in increased expulsions and transfers in schools with a higher proportion of black students. Specifically, a 1% increase in the percentage of black students is positively correlated with average increases in the latent expulsion and transfer rates of 0.79, 0.31 and 0.31 percentage points for nonfirearm weapons, illegal drugs and physical altercations, respectively. Furthermore, more severe punishments appear to occur in lieu of lesser disciplines. For example, higher expulsion and transfer rates for nonfirearm and illegal drug misconducts are offset by declines in suspension rates. Similarly, lower short-term disciplines for alcohol and physical altercation misconducts may be partially traded-off for higher expulsions, transfers and suspensions. These results parallel previous research, which finds that schools with a larger black student body are more likely to use extremely punitive discipline and implement zero-tolerance policies rather than first warn the students (Welch and Payne, 2010).

Table 3. Tobit discipline model estimates of latent marginal effects

	Nonfirearm weapon	Illegal drugs	Alcohol	Physical altercations
Expulsion/transfer				
Black	0.792*	0.310*	0.847	0.308***
Hispanic	0.316	−0.080	−0.190	−0.086
Suspension, >5 days				
Black	−1.241***	−0.396*	0.906*	0.437***
Hispanic	−0.612	−0.362	−0.221	−0.086
Short-term discipline				
Black	0.218	0.170	−0.369*	−0.360***
Hispanic	0.152	0.407**	−0.081	0.046

Note: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels.

Table 4 presents the unconditional and conditional elasticity estimates with respect to the black student body, which provide suggestive evidence that variation in discipline rates attributable to schools' racial compositions may exist primarily in schools where inconsistent disciplinary behaviour occurs.[2] Conditional elasticity estimates indicate that in schools with inconsistent disciplinary outcomes, more severe punishments are used in response to a larger black student body. However, unconditional elasticity estimates are not statistically significant, suggesting that it may not simply be the case that least severe discipline is observed in schools with a predominantly white student body or that the toughest punishments occur in schools with a predominantly black student body. Rather, in schools where inconsistent disciplinary behaviours are observed, a proportion of the inconsistency is attributable to student demographics. This is consistent with Kinsler (2011).

[2] We do not present elasticity estimates with respect to the Hispanic student body because the Tobit models' marginal effect estimates indicate a weak relationship between disciplinary inconsistencies and changes in the Hispanic student population.

Table 4. Discipline elasticity estimates with respect to the per cent of the black student body

	Nonfirearm weapon	Illegal drugs	Alcohol	Physical altercations
Expulsion/transfer				
Unconditional elasticity	0.021	0.008	0.013	0.028
Conditional elasticity	0.001**	0.001**	0.001*	0.003***
Suspension, >5 days				
Unconditional elasticity	−0.038	−0.016	0.013	0.022
Conditional elasticity	−0.001***	−0.001***	0.001*	0.002***
Short-term discipline				
Unconditional elasticity	0.011	0.011	−0.019	−0.023
Conditional elasticity	0.000	0.001	−0.001*	−0.002***

Note: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels.

IV. Conclusions

While calls for greater discretionary power for evaluating student misconduct have increased, inconsistent disciplinary behaviours across schools can inequitably impact students' access to education opportunities. We show that a portion of observed disciplinary inconsistencies can be attributed to differences in the student body's racial composition and that these effects are concentrated in schools with larger black student bodies. Moreover, we find that differential disciplinary behaviour is not unconditionally related to student demographics; rather, student body racial compositions are more likely to influence disciplinary decisions in schools that already have variability in making those decisions. Consequently, public policy that seeks to reduce educational inequities must be crafted with particular attention to the complexities underlying schools' existing predispositions to disciplinary inconsistencies.

Supplemental data

Supplemental data for this article can be accessed at http://dx.doi.org/10.1080/13504851.2014.978065

References

Bernburg, J. and Krohn, M. (2003) Labeling, life chances, and adult crime: the direct and indirect effects of official intervention in adolescence on crime in early adulthood, *Criminology*, **41**, 1287–318. doi:10.1111/j.1745-9125.2003.tb01020.x

Finn, J. (1989) Withdrawing from school, *Review of Educational Research*, **59**, 117–42. doi:10.3102/00346543059002117

Fitzpatrick, M. D., Grissmer, D. and Hastedt, S. (2011) What a difference a day makes: estimating daily learning gains during kindergarten and first grade using a natural experiment, *Economics of Education Review*, **30**, 269–79. doi:10.1016/j.econedurev.2010.09.004

Kinsler, J. (2011) Understanding the black-white school discipline gap, *Economics of Education Review*, **30**, 1370–83.

Kinsler, J. (2013) School discipline: a source or salve for the racial achievement gap?, *International Economic Review*, **54**, 355–83. doi:10.1111/j.1468-2354.2012.00736.x

McDonald, J. and Moffitt, R. (1980) The uses of tobit analysis, *The Review of Economics and Statistics*, **62**, 318–21. doi:10.2307/1924766

Welch, K. and Payne, A. (2010) Racial threat and punitive school discipline, *Social Problems*, **57**, 25–48. doi:10.1525/sp.2010.57.1.25