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## ARTICLE

**The Intergroup Dynamics of a Metaphor: The School-to-Prison Pipeline**

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**Introduction**

Among the several terms and phrases that populate the educational literature, both lay and professional, the phrase *school-to-prison pipeline* is without doubt the dominant, with few challengers in sight. Much like *at-risk*, or *eight hour retarded child*, linking specific school policies to subsequent incarceration captures the disturbing and seemingly entrenched statistics on racial inequity in schooling, doing so in a crisp imagery of a *pipeline*. With such a physical imagery, the phrase implies, or advances a causal connection between school practices and racial disparity of the harshest kind. It is no longer enough that minority and low-income students are at risk, mainly of dropping out; rather, the risks are now made conspicuously real and gravely consequential.

The phrase school-to-prison pipeline originated from within the professional domain of education. Its origin is relevant insofar as it bears on how the problem it references was initially framed. The attachment of the term *pipeline*, proposing as it does a specific causal relation, its magnitude and direction, can generate theoretical and methodological consequences that take the form of a paradigm. This can then shape research in very particular ways: It can define what is to be observed, how to observe it, what to expect, and how to interpret. Evidentiary problems, or in Thomas Kuhn's term, 'anomalies', can be confusing or annoying, or worse, ignored.

This paper is guided by such concerns. We proceed with cautionary hesitations that may be at odds with some of the prevailing assumptions implied by the phrase. We do not set out in a mode of denial or even of doubt: the statistics on racial disparity in school suspensions and later incarceration are undeniable. Our hesitations are informed by central reminders of any scientific inquiry: the consideration of diverse forms of evidence and the recognition of alternative explanations.

We begin with a brief summary of select research literature. Our intent is primarily substantive; that is, to gauge how research has been and is now framed. The objective is brief but crucial: to identify the salient theoretical assumptions and their methodological implications. From this, we pose the contrast between prevailing variable-oriented methods and the alternative set-theoretic methods that are more case-oriented. The similarities and differences between these two methods are examined by way of a state-level analysis of special education and out-of-school suspension rates and racial/ethnic disparities in incarceration rates. The focus on special education reflects an intentional conceptualization of a pipeline as originating, to a significant degree, with special education categories and suspensions, both contributing to school-level suspensions that are the final point before incarceration. The racial/ethnic focus is on comparative differences between Black, White and Hispanic groups. In light of the statistical patterns that are revealed, we explore potential alternative perspectives that can relocate the phrase from its metaphoric domain to its more appropriate methodological domain.

**The Theory and Method of School-to-Prison Pipeline: A Thematic View of Pertinent Literature**

Research on the School-to-Prison Pipeline (hereafter SPP) exhibits similarities to the study of school dropouts. Both concern severe disruptions, or terminations, of a scheduled and normalized progression toward graduation. Both share the belief that the disruption or termination is negatively consequential in ways that graduation mitigates or overcomes. Yet, in spite of this similarity, they come at their respective problems from different angles. For dropping out of school, there is a grammatical inclination to initially assign causation to individual students, specifically by conceiving the act of dropping out as a choice, albeit a wrong one. Yet, for many, the decision can be a rational one. This complicates the individual level considerably, for it moves the focus upward to social and organization matters, such as cultural differences and school practices. As observations become more comparative, individual differences become less prominent, and less causally significant.

As this upward focus gains in explanatory prominence, so do methodological requirements. Additional ethnographic study of dropping out as a process more than a decision provides more nuanced knowledge by following individual students as they evolve toward leaving school. While the costs are high, in time and necessary interactions, the rewards are equally high. More longitudinal studies do not rule out statistical studies; rather, they integrate the individual level with

the macro-conditions of culture, socio-economic constraints, and school practices.

From this generational learning curve, research on the SPP would seem to have a head start. The inclination would be to start with the school as the central causal factor. With this starting point, the mistakes of school-dropout research of reducing school leaving to individual motivations and characteristic differences would appear to be avoided. Whereas low or failing academic work were often independent variables in triggering the decision to drop out of school, in the study of SPP, they become dependent or control variables.

The division between the individual and the school levels of observation nonetheless remains. For SPP, differences in group behaviors become the individual level, and school policies about discipline and potential violence become the macro-organizational level. Despite a presumed upward focus, both school leaving and SPP cannot escape the *duality* of levels: Individual students do decide, in accordance with their social backgrounds, to leave—almost right on schedule; and individual students do behave in ways that challenge school policies—and almost as expected.

At the center of this duality, for both school dropout research and SPP, is a statistical pattern that transcends diverse educational places and persists through time. This is the obdurate fact of disproportionality: the higher presence of racial/ethnic minorities as the central figures in special education for the mildly retarded, school leaving, or the central targets of school punishment policies. These minorities are consistently two: African American and Hispanic students. Thus, a triadic structure prevails above and external to the considerable diversity across individual schools, communities and the individual students who inhabit both. This structure consists of Black and Hispanic students as the central representatives of *minority students*, White students as the representative of *majority students*, and the *established practices* of American public schooling.

With this larger context in view, it is easier to distinguish meaningful from peculiar evidence, and thereby draw parallels across research topics. Consider the affinity that individual characteristics or behaviors do *not* explain the rates of disproportionality. For special education, disability or handicapping conditions do not explain differential placement (Ysseldyke, Algozzine, Ridley & Graden, 1982). For dropping out, while correlated with school failure, leaving school is a process that begins in elementary school (Rumberger & Lim, 2008). And against the correlation between school failure and dropping out, Fine (1991) revealed that students who were most critically conscious of school practices had a higher probability of leaving. These patterns are replicated in SPP research. As Skiba, et al. (2000) conclude: “Neither these nor any previous results we are aware of provide any evidence that racial discrepancies in school punishment can be accounted for by disproportionate rates of misbehavior” (p. 16).<sup>[1]</sup> The absence of differences in misconduct between minority and majority students removes the focus away from individual conditions, individual choices, and individual race/ethnic backgrounds and onto racial disparities in school disciplinary practices. African American students, who are no more disruptive than others, are nonetheless targets of more severe disciplinary actions for minor as well as major infractions. The consistency of differential punishment is the meaningful evidence. Most importantly, differential punishment need not derive from discriminatory intentions: Differential punishment persists through time and space, while intentions come and go. The resilience of differential punishment is a *structural correlation* that is one of several pillars to the triadic structure of American schooling.

It is, then, reasonable and productive that much research on the SPP focuses on school suspensions and expulsions as the central instrument of differential punishment. Such instruments are the extension of zero tolerance policies (Advancement Project, 2010). Yet, while these strategies derive from a flawed policy, their effects flow in only one direction. As the term pipeline implies, each step, subsequent to an initial referral for disciplinary reasons, imposes redefinitions of a student’s character, most of all his/her expected behavior. As disciplinary infractions mount, giving way to expulsions, a student becomes closer to the juvenile justice system. As with criminal arrests, suspensions cumulate negative consequences: suspended students “fall behind their peers, have higher school dropout rates, and may be unable to attend alternative education program, are at greater risk for engaging in delinquent acts that lead to involvement with the juvenile justice system” (Glennon 2009, p. 978). Suspended or expelled students come with prior infractions, and such a record impacts judgments now rendered within the juvenile justice system. As noted by sociologists decades ago, this process entails the collateral influence of *secondary deviance* where once diagnosed or labeled, the individual must now manage both his/her *primary* deviance as well as the stigma of being labeled, a new orientation to a public label that is *secondary* to the initial deviance (Lemert, 1967). In terms of differential punishment, a student’s record of suspension and expulsion exerts its own effects which are now quite independent of the initial referral for some behavior misconduct.

The structural correlation of significance is not, therefore, between student characteristics or conduct and differential punishment. Student characteristics and conduct are, in essence, random; as noted earlier, they come and they go. The correlation is indeed structural, between an organizational response that is deeply routinized because it is predictable, and

the differential racial outcomes. Such outcomes are more than they are less racial; that is, the racial composition of the outcomes themselves come and go, but they tend to flow in one direction—toward African American and Hispanic students. Yet, importantly, the racial composition of the pipeline varies across time and space. Just as it is alluring to focus on student behavior as the initial event, it is equally alluring to explain movement from the event as facilitated by attributes of racial background.

### Some Theoretical and Methodological Considerations

The attraction of contrasting student behaviors, accentuated in school settings, and the attraction of racial disparities as the predictable outcome are good examples of Alfred North Whitehead's "fallacy of misplaced concreteness" (1925, p. 64), or in more contemporary terminology, of *essentialism*. The fallacy of interchanging, or misplacing, the abstract for the concrete reifies the latter by minimizing or ignoring the interconnections that link an object, an event, or a behavior to others. Such reification leads to an image of the object as exhibiting an *individual independence*, an image that relies on a conceptual disaggregation and separation in the first place. Yet the reality is quite different: Objects, events and behaviors, among other examples, are embedded, or indebted, to others, and are so across different times and locations. In brief, the school-to-prison pipeline has existed before, with different actors and alternative outcomes, but with far more similarity to the contemporary pipeline than difference.

When theoretically aware of the fallacy of concreteness, the focus shifts from the object, event or behavior to the interconnections. Accordingly, the terms that tend to dominate commentaries and analyses need to be theorized. Race and disproportionality, school and pipeline become proxies, or reflections of collective dynamics that vacillate between closed and open interconnectedness. Closed systems tend toward static interconnections: The proportions of major cultural groups remain relatively stable over periods of time, as do the instruments of school policy that are sensitive to these proportions. Racial outcomes that repeat over time both generate racial interpretations and validate the instruments of school policy. It may be further theorized that decentralized systems, as the dominant organizational form of American education, tend to uphold such static interconnections, doing so around the essential groupings of race and ethnicity. More open systems, in contrast, are vulnerable to shifts in behaviors and their interpretations. Shifting boundaries tend to favor more structural considerations over those that invoke agency and culture. In sum, said with due cautions, Whitehead's fallacy of misplaced concreteness, and the contrast between closed and open systems, prompts the contrast of a single versus multiple pipelines. The former conception runs the risk of mistaking the abstract for the concrete, thereby complicating methodological issues considerably.

A prime methodological consequence is yet another fallacy: the "ecological fallacy" noted by W. S. Robinson (1950) some 62 years ago. With affinities to Whitehead's fallacy of concreteness, Robinson showed how a strong, positive correlation between the percentage of immigrants in census tracts and the rate of literacy (.53) was, nonetheless, erased when individuals were examined. The fallacy was the tendency to infer individual behavior from ecological correlations based on population level data, here as in percentage of immigrants and literacy. In actuality, immigrant individuals resided in states where the native population was more literate.

Robinson's demonstration was sharp and broadly relevant. If invoked to SPP, findings of strong correlations between the proportion of school populations that are African American or Hispanic and rates of suspension/expulsion do not permit the inference, or conclusion that individual members of these groups are the ones suspended or expelled. The reverse may be the case: As the size of one or both groups increases, the behavioral infractions of Whites increase in reaction to a perceived threat, and in actuality, it is White students who are suspended. If, however, the reach of the correlation extends to the composition of those suspended, more accurate inferences can be made. If we know the proportion of those suspended who are African American or Hispanic, we can clarify the meaning of the correlation.

Nonetheless, even in the absence of such compositional information, strong but patterned correlations between ecological variables are not inherently spurious. They tell us about the *behavior of the system*, and inferences must be appropriately confined to that level (Przeworski & Teune 1970). If the differential conduct of student racial groups does not explain the differential modes and rates of discipline, it is the latter that require explanation at its own level. That level is the macrolevel, and its behavior does not require knowledge of the behavior of the individuals who compose and generate it. As Thomas Schelling (1978) keenly noted, many social processes are reproductive "in the aggregate," for they persist "no matter how people behave" (p. 50). The pipeline does, in actuality, exist; and it reproduces, in actuality, disparities in outcome that are correlated with race. Yet all this can happen with little knowledge or intention on the part of key actors. It may, in fact, occur against intentions to change or end it. Here, the SPP may mirror the affinity between the legacy of Jim Crow legislation and the current mass incarceration of Black and Hispanic men. As described exhaustively by Michelle

Alexander (2010) in *The New Jim Crow*, the effectiveness of such a phenomenon is not dependent on the rational choices nor strategic planning of key actors across institutions. Just as the legislators who place voting restrictions on felons are likely not coordinating their actions with local police departments who receive additional resources to fight the so-called war on drugs, prison wardens and school principals are not consulting each other when making individual decisions. In both of these situations, however, the broad and cumulative impact of such interconnected choices is highly effective as microbehavior, but produces sharp disparities at the macrolevel.

In summary, the factors that are commonly identified as the main causes of the SPP are often conceived as exhibiting individual independence, and their interconnectedness is blurred or only verbally acknowledged. In the absence or paucity of counterfactuals, inferences made about the causal role of school suspensions need to be made with caution (Glennon 2009). When conceived as an interconnected system, the pipeline can be an appropriate term. So conceived, student racial groups exist only in relation to each other; rates of suspension and expulsion behave in relation to others; and, rates of incarceration are the predictable outcome of these interconnections.

### **The Matter of Appropriate Methods: *Variables or Sets?***

#### **The Prevailing View: Variables and Statistical Methods.**

With data that consist of ecological variables, from crime rates, marriage and divorce rates, school drop-out figures, suspension and expulsion rates, the routine and thus dominant method of analysis is some form of statistical method, with multivariate regression topping the list. Multivariate methods are both appropriate and powerful. The unit of observation can range from individuals to countries. The measures that constitute the research are seen as properties of the unit. Thus, an individual has a criminal record, and a state or a nation has an aggregate or relative crime rate. These properties are largely, if not wholly, population or structural features, and are viewed as inherent to each unit observed. As inherent features, they may be considered to be trans-societal: All countries have a rate of crime, or an enrollment ratio in secondary schools, or a marriage and divorce rate. Bolder is the tendency to view such variables as trans-historical: they occur across time as well as space. Finally, the conception of causation, how these structural properties are related, is ontogenetic. For example, the effect of city size derives from *within* the sheer influence of population density: as city size increases, so must the rate of crime. Exogenous factors, from cultural traditions to the impact of singular events, can be overshadowed by more accessible structural properties.

The statistical approach is the predominant empirical method of studies of the SPP that have appropriate units of observation and the structural properties relevant to the concept of the school-to-prison pipeline. These units range from nationally representative samples of Local Educational Authorities (LEA) (Achilles, McLaughlin, & Croninger, 2007), to a national sample of elementary and middle schools (Skiba & Knesting, 2001). From the units of observation, it is a quick next step to relate group differences, in this case, racial differences, to differences in suspension/expulsion or incarceration rates.

This procedure is guided by the heart of multivariate analysis: to reduce the variation across the units in the dependent variable. The payoff of this procedure is clear: The more variance that is reduced or explained, the stronger the explanatory power of the factors conceived as independent or predictive. Moreover, the rule of parsimony is the guide: The variation should be explained with the fewest number of variables. The results of multivariate analyses are primarily conveyed in two items: the  $R^2$  that gives the amount of variance explained by the independent variables, and the regression coefficients for the variables. The standardized coefficients, especially, allow one to assess the relative strength of each variable in comparison to others. Thus, the ability to state precisely what percent of the variation in the dependent variable is explained by the independent variables, and to assess these variables against each other, can be done with crisp language that conveys powerful implications. To summarize, the decisive language of prediction completes the framework that guides the research, from a number of comparable units of observation, to a correlational conception of causation, to a determinable measure of explanatory strength.

The power of multivariate techniques is often said to be their capacity to generalize, yet the most common limitation to this claim is the cost of losing internal validity. The statistical technique of regression does not compare the units to themselves; rather, the units are compared to a mathematical construct, the regression slope. How well the units come to this construct is the basis on which the explanatory, or predictive power is made. Yet, beyond this counter-claim are other criticisms that are not easily overcome.

The first may be the most central: The assumption that units are independent is difficult, if not impossible, to uphold.

Recalling Whitehead's fallacy, schools, districts, and states are very much interconnected. Even if they are separated by thousands of miles, they all are likely to share in the *narrative* about the school-to-prison pipeline. As a metaphor, it draws diverse schools and states into a symbolic environment that implies what school properties are relevant and how they can or do cause unwanted outcomes. The second is akin to the presumption of independence, but alters it somewhat. This is the assumption that the effect of some variable is the same across units. Furthermore, the assumption implies that each independent variable has the same meaning across the units. In the search for the independent effects of school suspensions, or of the size of minority populations, the implication is that suspensions or racial minority status affects some outcome in common ways. Where this effect is not evident in a number of units, the interpretation is more commonly made in statistical terms: The degree to which the units depart from the regression slope remains the issue.

A final limitation derives, oddly enough, from the acknowledgment of the previous ones. This is the recognition that variables interact. When two or more variables combine, there is an effect from this interaction that is greater than their independent effects. The extent of such interaction effects is certainly recognized, but so are the technical constraints that inhibit their measurement.

### A Different View: Set-Theoretic Methods

If these and other limitations to multivariate statistical methods are taken seriously, and thus are more than limitations that inhibit, they can be taken as the building blocks of an alternative method. One such alternative begins with the unit of observation. For multivariate methods the unit is the variable. Analyses are conducted with the language of rates that vary across units. Like the differences in heights between individuals, schools can have a higher rate by *X* number of suspensions or drop-outs. Yet the alternative to the conception of units as variables is to view them as sets. The method becomes set theoretic, and all the assumptions that uphold multivariate techniques fall away.<sup>[2]</sup>

A central notion to set theoretic methods is "irrelevant variation" (Ragin, 2008, p. 77; also in Ragin, 1987, 2000). In a range of values, e.g., rates of suspensions across schools, the variation from the lowest to the highest is likely to be several variations, with segments demarcated from other segments by their shared differences: Some are very low, others are in the middle, and some are very high. The variation within these segments is essentially irrelevant, for once in the segment, or set, one is in.

The language of set-theoretic relations is far more common in everyday language than is the language of multivariate methods. As George Lakoff (1973) demonstrated, we employ linguistic hedges, such as *sort of*, and *more or less* in everyday conversation. We conceive of social relations and their effects in terms of sets, not in terms of variables. We speak of African Americans and Whites, and the disabled, the at risk, the learning disabled, and the rich; and we proceed to assign causal powers to each. We know what are subsets and supersets: Dogs are a subset of mammals; Protestants are a subset of Christians; Christians are a subset of monotheists; democratic nations are a subset of developed countries. And thus, might not special education suspensions be a subset of school-level suspension rates, which are, in turn, a subset of incarceration rates?

We are quite aware of the fact that sets are not homogeneous, for the significant variation is *more or less*, or *more in than out*. As Whitehead noted, the boundaries that seemingly define objects are not clear and concrete, precisely because of their interconnectedness. This indefiniteness was given a formal name as *fuzzy sets* by Lotfi Zadeh in 1965. Along with Lakoff, and others, fuzzy sets acknowledge the permeability of boundaries, and thus measure their fuzziness with linguistic anchors that define membership in sets such as *fully in*, *more in than out*, *more out than in*, and *fully out*. Thus, countries can be fully in or more in than out, or more out than in with regard to democratic governance. The reference is not to the incremental increase in a value, like the Fahrenheit scale, but to membership in a given subset of developed countries. Similarly, schools and states can be fully in, or more in than out or more out than in with regard to the range of suspension rates, or incarceration rates. The names of sets are labels that demarcate the variation by qualitative judgments, not by statistical techniques that rely on measures of central tendency.

Among the merits of a set-theoretic framework are ones that are minimized or inaccessible to multivariate methods. One is that set-theoretic connections are "asymmetrical" (Ragin, 2008, p. 15). If it is hypothesized that developed countries are democratic, the claim is made that the set of developed countries is a subset of the set of democratic countries. Importantly, if poor countries are found to be democratic, this does not weaken or invalidate the claim that connects economic development to democracy, or developed countries to democratic governance. It would, however, weaken correlations and their interpretations in multivariate methods. The additional merit resolves this apparent difficulty: There are alternative paths to democratic government. The set-theoretic concept of *equifinality* underscores that similar origins



may eventuate in different outcomes, and different origins may result in similar outcomes. The full range of logically possible combinations of factors, or conditions, attempts to capture the causal complexity of the outcome. The unit of observation, therefore, is the *configuration*, not individual variables. If there are several paths to labor strikes, to revolutions, to welfare systems, to *incarceration*, there are different configurations of causes that can lead to the common outcome. Critical to each configuration is the recognition that a factor can exert an effect by its absence as much by its presence. Thus, the effect of school suspensions on African American students may derive more from the minimal presence or conspicuous absence of White students than from discriminatory punishment procedures against African American students. Accordingly, there are alternative paths to school suspension, and thus to incarceration. In sum, there are several and qualitatively different pipelines.

Like multivariate, statistical methods, set-theoretic methods are not without their limitations. Of the critiques posed, two are especially crucial.<sup>[3]</sup> The first, and arguably the most significant, is the selection of causal conditions. Because set-theoretic methods are conducted on a small or intermediate number of cases, the causal conditions, or independent variables, must be carefully selected. For technical reasons, the addition of another causal condition magnifies the complexity of the analysis, and thus strains the interpretation of results. The strain is, to borrow from Malthus, geometric and not simply arithmetic.

The second critique is likely the most substantively relevant: the importance of temporality. That the effects of causal conditions are not simply static but are ordered sequentially – or are significant because of specific, temporal circumstances – is acknowledged as a challenge that has the potential to advance the methods more than impede them. As Rihoux and Ragin (2009) note, considerable advancement has occurred, as illustrated by affinities between sequence techniques and set-theoretic methods.

Any analysis of the school-to-prison pipeline, whether it be multivariate or set-theoretic, is complicated by both of these critiques. They are, of course, not particular to set-theoretic methods. On the contrary, they are well known and well discussed as challenges to multivariate regression techniques. This mutuality reveals important issues of technical and substantive commonality. Yet, despite these commonalities, the matter that displays the most difference is the conception of cases. For multivariate methods, cases are not compared directly, while for set-theoretic methods, cases are compared directly. What follows from this is equally consequential: Multivariate methods conceive of relations as *correlational*, inclining one to interpret school practices as causing incarceration. Set-theoretic methods, in contrast, conceive of relations as *constitutive*, displacing causal language with set-theoretic terms, interpreting school practices as subsets of subsequent incarceration.

The state-level analysis conducted here employs both multivariate regression methods and fuzzy-set methods. The intent is to not to assess their relative strength, but to compare their results. Similar results may be interpreted as supporting other studies that employed multivariate methods. Divergent results, however, may suggest the importance of set-theoretic methods as, at minimum, a viable alternative way to both conceptualize and to measure the school-to-prison pipeline.

### **An Empirical Inquiry: An Analysis of State Differences**

Although feared as threats to the validity of social research, both the fallacy of misplaced concreteness and the ecological fallacy may be viewed as reminders that can stimulate comparative analysis, with a theoretical perspective appropriate to the *behavior* of macro-level factors. With such reminders, the following explores state-level differences in rates of incarceration—specifically, rates of placement in juvenile residential facilities. As causal antecedents to this outcome, a number of school-related factors are examined. The intent is to approximate the pipeline that runs from school disciplinary factors to residential, correctional incarceration.

### **Data and Measures**

The focus of the analyses is on the comparative differences between three racial/ethnic groups: Black, Hispanic, and White. The central dependent variable, or outcome of interest, is the racial/ethnic contrast in levels of incarceration, measured for 2006.

For the multivariate methods, all variables are ecological variables, indexed as percentages. The school variables reflect two dimensions. The first dimension is the role of students with disabilities, or special education students. It is well established that many of these students present disciplinary problems for school. To capture this, measures for the percent of Black, White or Hispanic students in the three major categories of special education are included: mental retardation,

learning disability (LD), and emotional disturbance. In addition to these measures is a global statistic: the percent of the total number of students with disabilities who are Black, White or Hispanic. The second dimension is the aggregate rates of student suspension, both for special education and for the regular student population. The latter is the figure for out-of-school suspensions (see Appendix, Tables 1a, 1b).

The independent variables are conceptualized as interconnected in a causal direction that suggests a pipeline: from one or more of the special education categories; to the rate of suspensions for special education students; to the racial/ethnic composition of the total number of students with disabilities; to the racial/ethnic rates of out-of-school suspensions; and finally, to the end point of the pipeline: racial/ethnic disparities in residential incarceration.

For the set-theoretic methods, there is no language of *variables*—the measures that are the conceptual equivalents to those above are *conditions*. The condition of special education suspension, or percent of total disabilities, is a score that calibrates (not measures) the *degree of membership* in the given set: the set of students in mental retardation, in special education suspensions, in out-of-school suspensions, in residential placement. The membership scores employed here are six linguistic anchors: *fully in* [1], *mostly in* [.8], *more in than out* [.6], *more out than in* [.4]; *mostly out* [.2]; *fully out* [0].

Set theoretic methods rely on two measures to assess the strength of subset-superset relations. The central measure is consistency, denoting the proportion of cases with the configuration of conditions that result in the outcome relative to the total number of cases with the conditions. In probabilistic terms, if 13 out of 15 cases show a consistency of the causal conditions and the outcome, the measure of consistency is .86. Like statistical significance, this level gives assurance that the connection between the causal conditions and the outcome is strong and explicit. If the measure is much lower, there is little or no assurance.

The second measure is related to consistency. This is the measure of coverage. This denotes how well the configurations, as various paths to the outcome, cover the cases. A high level of coverage suggests that the configuration(s) covers the various possible ways the outcome can occur or be achieved. Thus, it is possible that consistency and coverage can “work against each other” (Ragin 2008, p. 55), for high consistency may occur with low coverage.

The independent variables and conditions are all school-related. As such, they do not presume to detect or reflect contextual influences that come from outside schools and individual states. To tap some measure of contextual influences, two measures are explored. One is a contrast in the institutional climate that tends to prevail in state school systems, reflected in the historical conception of and treatment toward deviant or atypical students. These differences can be racial/ethnic and socioeconomic, but also the challenges presented by physically or mentally handicapped students. Here the history of a state’s institutions for deaf and blind, mentally retarded, neglected, and delinquent youth represents a contextual influence on public schooling, albeit from the background. Following earlier research on contrasting “institutional sequences” (Richardson 2006, 2009), this influence stems from the contrast in the timing of founding such institutions for disabled and delinquent youth, a contrast that centers largely around the founding of reformatory institutions relative to state institutions for the physically or mentally disabled. States that established reformatory institutions and enacted child labor laws prior to founding state hospitals for the deaf or blind are denoted as *punitive*; alternatively, states with the reverse sequence are denoted as *paternal*. The difference has much to do with the powers of the state relative to local authorities. Punitive sequences tend to be more decentralized, giving more powers to local agencies that often reinforce racial and ethnic distinctions, doing so in punitive ways. States that establish hospitals for the physically and mentally disabled by state authority over local autonomy give earlier and more emphasis to rehabilitative policies toward disabled and deviant groups. These states favor a more paternalistic orientation than a punitive one.

The second type of influence is the contrast in political cultures. Following the research of Daniel Elazar (1972), the concept of political culture taps people’s views of government, its primary function, its role in and toward society. Elazar distinguished three types of political culture that characterized the states: moralistic, individualistic and traditionalistic. The moralistic political culture views society as greater than the individual. Government is an instrument for the public good, itself seen as a commonwealth embracing all. The commonwealth was more along the lines of an organic whole than a conservatively defended hierarchical system. The individualistic culture is the obverse of the moralistic. Government’s purpose is more strictly utilitarian, designed as the means to preserve individual freedoms. Traditionalistic culture elevates social and particularly family ties as paramount, superseding the rights and interests of the individual. The function of government is to conserve the order of society, which is a naturally emergent hierarchical structure.

## Comparing Results



## **Multivariate Analyses**

The results of the multivariate analyses are given in Tables 1c and 1d. What is immediately evident are the racial differences in special education suspensions. For Black students, higher representation in mental retardation is the significant contributor to suspensions; for White students it is emotionally disturbed; and for Hispanic students it is Learning Disabled (LD). For Hispanic students, however, it is noteworthy that the control for their proportion of school-age is the real determinant of their proportion in LD. For Black and White students, their proportion in the special education category contributes to their suspension rates, above what would be expected from their school-age proportion. This contrast suggests evidence of discriminatory punishment for Black and White students that is not evident for Hispanic students. For the analysis of out-of-school suspensions, this pattern of difference in the special education category remains for the three groups.

As elaborated upon later, this race/ethnic difference in the special education category might be considered as an initial point in the pipeline. However, it would be incomplete and misleading to assign some causal significance to the special education category generally. The fact that the three groups differ in the particular category that is linked to suspension rates is the specific dynamic that triggers subsequent points along the pathway—an interconnected process that may raise the likelihood of incarceration.

For the regression of Incarceration, for all groups the significant predictor is out-of-school suspensions. For only Hispanics is the percent of total disabilities significant. Nonetheless, the removal of this variable does not have any significant effect – its significance here would appear to be solely statistical, not substantive. Thus, for all groups, by the point of out-of-school suspensions, the pipeline has narrowed to a critical juncture that presents a binary option: dropped or pushed out of school without incarceration, or dropped or pushed out with incarceration as the consequence.

Table 2 explores the effects of contextual factors on incarceration rates for Blacks and Whites. Two sorts of contextual factors are examined: First, the impact of the other group, e.g., the statistical effect of the Black suspension rate on the White incarceration rate, and the reverse. And second, the impact of institutional sequence and political culture, again examining the effects of paternalistic sequence and moralistic culture, theoretically identified as favoring Whites, on Black incarceration rates; and punitive sequence and traditionalistic culture theoretically identified as disadvantaging Blacks, on White incarceration.

The results shown in Table 1d reveal the interdependency of Blacks and Whites. For both groups, the suspension rate for the other group displays a strong, negative relation to the incarceration rate. Simply put, the higher the Black (White) suspension rate, the lower the White (Black) incarceration rate. When the measures for institutional sequence and political culture are added, there is no apparent effect for either punitive or paternal. The one evident effect comes from the moralistic political culture, showing a strong, negative relation: states with this culture have statistically lower rates of Black incarceration. This suggests that such a political environment, one that elevates an organic, commonwealth conception of culture as superior to even entrenched hierarchical cultures, reduces that level of Black incarceration. The difference between a moralistic and a traditionalistic political culture is seemingly a sharp one relative to racial incarceration: the bivariate relation for Moralistic culture and Black suspension rates is  $-.56$ ; for Traditionalistic culture and Black suspension rates, the correlation is  $.50$ .

## **Fuzzy Set Analysis**

The results for the fuzzy-set analyses are given in Tables 2a, 2b, 2c. The analyses seek to mirror the procedure followed in the multivariate analyses. Accordingly, the analysis begins with special education suspensions as the outcome, and membership in the categories of mental retardation, LD and emotionally disturbed as the causal conditions. It is important to reiterate that the outcome is NOT a dependent variable. States are calibrated to indicate the degree of their membership in the set describing special education suspensions. From here, the analysis proceeds to the set of out-of-school suspensions, and finally to incarceration.

The results for the first analysis suggest strong similarities to the multivariate results. In brief, the fuzzy-set analysis indicates group differences along the lines found for the regression analysis. For Blacks, it is membership in mental retardation that is the significant subset of special education suspensions; for Hispanics it is LD; and for Whites it is emotionally disturbed. While LD is evident for Blacks and Whites, it may be eliminated along theoretical grounds and retain the most parsimonious results.

As with the multivariate analysis, the next step is the analysis of out-of-school suspensions. The special education category for each group is examined as a causal condition, joining the percentages in total disabilities and special

education suspensions. As with the multivariate results, the special education category identified with each group retains its significance in the fuzzy-set analysis. Thus, each special education category remains a subset from special education suspensions to the school-level suspensions.

In the analysis of incarceration, the results mirror the statistical analyses: It is out-of-school suspensions that are consistently the important subset of incarceration. What information is important to retain, however, is how this condition, most proximate to incarceration, encompasses the racial/ethnic difference in special education category. Out-of-school suspensions are constituted by these conditions, not simply (or erroneously) correlated to them.

Tables 2b and 2c give the results for institutional sequence and political culture, and like the previous statistical methods, examine effects that reduce rates in incarceration. Here, the fuzzy-set results are fundamentally similar to the regression results. The results shown in Table 2b support the conceptual distinctions given to punitive and paternal sequence and to the types of political culture: a punitive sequence and a traditionalistic culture should disadvantage Blacks, and a paternal sequence and a moralistic culture should restrict, but not disadvantage, Whites. These combinations are evident in the results. Yet, it is important to interpret the plus (+) sign as a logical *OR*: hence, a Black out-of-school suspension rate *OR* a punitive sequence *OR* a traditionalistic culture is a significant causal condition of incarceration membership.

Table 2c gives support to the regression results that demonstrate racial interdependency. However, this interdependency holds for Blacks and Whites, but not for Hispanics. The finding is clear: A high (low) rate [or] set membership of [or] in out-of-school suspension for one group is linked to a low (high) rate/membership in incarceration for the other. This zero-sum relation holds for suspensions as well, anticipating, as it were, the outcome of incarceration.

### **The Comparisons of Specific States**

As noted earlier, an important limitation of multivariate methods is that cases are not compared directly to each other; they are, rather, compared to the regression slope. Precisely which states are high or low with respect to incarceration levels may be gauged by measuring the discrepancy between what a set of variables predicts and what a case (state) actually has as its rate of incarceration. The merit of set-theoretic methods, in contrast, is that cases are directly compared to each other. States that are coded as fully in the target set of high incarceration are by definition compared directly to other states, but not to a mathematical convention.

Tables 3a and 3b give the comparison of specific states for multivariate methods and set-theoretic methods. For multivariate methods, the Table identifies states as high in incarceration by an analysis of residuals: Actual rates that are significantly higher than predicted rates are considered high, while actual rates significantly lower than predicted are considered low. For set-theoretic methods, membership scores above .5 constitute high; scores below .5 are low.

A quick glance at Table 3a reveals a striking fact: There is very low to negligible overlap between the racial/ethnic groups. In no state where Blacks are high are Whites or Hispanics also high. Racial/ethnic disproportionality in incarceration, then, appears to be *state specific*. However, there is the additional suggestion of an interracial dynamic: In a state where Whites are high, Blacks are low; for the three states wherein Blacks are low, Whites have high rates of incarceration; and six states where Blacks are high, Whites are low.

For set-theoretic results, seven states show overlap between Black and White; three states show overlap between Whites and Hispanics; and five show overlap between Blacks and Hispanics. To be sure, the location of racial/ethnic incarceration disproportionality is state specific, but it is also region specific. Fourteen of the 24 states (58%) that have high incarceration for Blacks are southern; six of the 14 (43%) states that have high rates for Hispanic are farwestern and southwestern; and for Whites, there is a mix of regions. Certainly levels of incarceration are tied to relative population size, but this alone cannot explain the dynamic of interdependency. Beyond relative demographic proportions, state-school systems are indeed systems.

### **Discussion and Conclusions**

The comparison of multivariate and set-theoretic methods presents a contrast of very different strategies, both theoretically and analytically. Possibly the sharpest fault line between the two is the contrast between a linear view of social analysis and a view that places causal complexity at the forefront. For multivariate methods, the complement of assumptions and objectives favors a linear view, as conveyed by the central notion of least squares. For set-theoretic methods, the concept of equifinality acknowledges and builds in the fact that different paths can lead to very similar outcomes. By its current definitional status, the issue of school-to-prison pipeline is situated between these different visions and strategies.

On the one hand, it is reasonable and real to envision a pathway from school processes to incarceration for specific racial/ethnic minorities as a general, linear dynamic of American public education. Despite the fact that American public education is broadly decentralized, there is an abundance of evidence that underscores the persistence of behaviors and outcomes as routine and predictable (cf. Sarason, 1996; Dreeben 1968; Meyer & Rowan [1977] 1992; Tyack & Cuban 1995). The notion that one school is very much like another has been a conceptual pillar of many strategies of educational reform that seek to explain the persistent variation in racial/ethnic educational outcomes.

On the other hand, there is an abundance of evidence that cautions against making general claims, by virtue of equally persistent evidentiary discrepancies, or reversals. One such body of anomalies is the factual content of disproportionality itself. While the general evidence defines it as a minority issue, the variation itself varies: African American and Hispanic students are generally overrepresented in special education and lower tracks; but elsewhere, and at different times, White students will be overrepresented, and minority students will be overrepresented in higher tracks and gifted classes (see e.g., Glennon 2002). Thus, the general and the particular must be viewed together.

The contrasting merits of the two methods explored here should not have as its conclusion the declaration of the superiority of one over the other. The strength of an approach that explains the general commonalities across states is valuable in itself. Despite state particularities and regional histories, school suspensions have consequences that extend beyond school – most harmfully, to incarceration. Yet such particularities and regional histories matter. They set many of the boundaries that legislate the policies which, in turn, regulate the behaviors that generate suspensions and expulsions. In short, general, linear forces extend their influence in relation to contextual forces, which are the real regulators of the place and targets of such general forces.

Seen another way, general linear forces are the most visible, known, and thus debated of forces. The general force of school zero-tolerance policies and school suspensions are in the middle. Just as robins are seen as the best representative of birds, these policies and their practices of suspensions are the best known representatives of the issue: They *are* the school-to-prison pipeline. Yet above them are more abstract concepts, such as mass schooling and educability. And below them are particular or specialized processes, such as special education referral, baseline standards, and IEPs. As a metaphor, the phrase *school-to-prison pipeline* is a graspable representation of American schooling.

The discourse about the current state of racial/ethnic minorities, education, and achievement is not one that employs the abstract language of mass education and educability, or the specialized language of referral and policy specifics. It is about the middle level that *condenses* and *reorders* the abstract and the specialized metaphorically, and thus provides a mental model (Lakoff & Johnson, 2003) that explains the causal complexity of the topic in a language that is diffusely known, and actionable – however wrong.

The specialized results of both analyses are worth emphasizing. For the analysis of special education suspensions, the specific importance of Mental Retardation for Black students, LD for Hispanic students, and Emotional Disturbance for White students suggests that each category is racially typed in a way that generates a series of subsequent consequences that may lead, in different ways, to a similar outcome: incarceration. The long legacy of racial overrepresentation in special education stemming from the late 1960s is a legacy of Black students in classes for the mildly mentally retarded. The significance of LD for Hispanic students is certainly linked to the legacy of bilingualism, particularly to the politics that defined Spanish speaking as a barrier to learning. For Whites, ED can be a safe category, as LD was once safe from the stigma of retardation. There is, one might ponder, a category sequence that is moving across racial/ethnic groups, but doing so at the abstract, general level. It is, therefore, largely out of sight, and only indirectly enters the debate over schools and incarceration.

Nonetheless, the idea of a temporal sequence of school categories may be precisely what generates the school-to-prison pipeline. As a macrovariable (Pierson, 2003), it is in the background, as well as above the middle arena of study. But its influence is revealed in ways that still disguises it. One such disguise is how White rates of suspension and incarceration can alter the rates for Blacks, and vice versa. This *reverse interaction* emphasizes the systemic structure of their relations in schools. For Blacks and Whites, their interrelation reflects a zero-sum structure, which does not include Hispanics. This revealed, school policy commands the attention and remains the central cause. Conveniently, it is the proper target for reform. Meanwhile, the movements of macro-variables proceed.

One such movement that has been proceeding for some decades is the increasing isomorphism of racial disparities in schooling and delinquency, or between public education and juvenile justice. The school-to-prison pipeline may have been easy to predict by the 1960s. As the juvenile justice and public education systems employ strikingly similar causal languages, one about criminally deviant conduct and another about educational failure, they are increasingly replications

of each other. Notwithstanding the injustice of school push-outs and subsequent incarceration, the likely fact remains: Public education and juvenile justice are increasingly overlapping *sets*. Or, more precisely, one is the subset of the other.

## APPENDIX

**Table 1a. Data Sources.**

The data for state rates of incarceration are taken from the Office of Juvenile Justice and Delinquency Prevention, State Comparisons, Census of Juveniles in Residential Placement, U.S. Department of Justice, Washington, D.C., for 2006. The data on special education, for racial/ethnic composition in categories and for suspension rates, are taken from Data Accountability Center, IDEA Data, Part B, Child Count (2000 through 2011); and Part B, Discipline (2001-2 through 2010). The data for out-of-school suspensions are taken from Office of Civil Rights: [ocrdata@ed.gov](mailto:ocrdata@ed.gov), National and State Estimations, 2000. All school-related variables are measured for 2000, while the measure of incarceration is for 2006. This lag in years is intended to capture, to some degree, the delayed effects of school disciplinary actions on subsequent incarceration rates.

**Table 1b. The Means and Standard Deviations for the Variables:**

	<b><u>Mean</u></b>	<b><u>SD</u></b>	<b><u>Min</u></b>	<b><u>Max</u></b>
<b>Mental Retardation</b>				
Black	25.9	22.7	.62	76.0
White	59.8	22.1	23.4	97.2
Hispanic	11.2	14.9	.16	61.1
<b>LD</b>				
Black	16.1	14.5	.66	59.4
White	71.9	16.9	30.77	99.0
Hispanic	9.55	12.19	.36	53.3
<b>Emotionally Disturbed</b>				
Black	22.9	18.2	.84	67.8
White	61.1	16.8	30.7	97.8
Hispanic	6.8	9.7	.14	44.4
<b>Special Education Suspensions</b>				
Black	32.7	23.8	.59	75.7
White	50.8	21.1	20.6	98.3
Hispanic	10.6	13.5	.17	60.7
<b>Out-of-School Suspensions</b>				
Black	26.6	20.7	1	70
White	57.6	19.0	27	98
Hispanic	10.5	12.2	1	50

**% of Total Disabilities**

Black	17.1	15.0	.07	55.1
White	69.0	18.7	8.5	98.0
Hispanic	8.5	11.4	.28	52.0

**% of Incarcerated**

Black	35.4	27.7	1	76
White	44.9	19.6	13	91
Hispanic	13.4	14.8	1	72

**I. Results of Regression Analyses**

**Table 1c. School Suspensions and Incarceration.**

	<b><u>Black</u></b>	<b><u>White</u></b>	<b><u>Hispanic</u></b>
<b>Dependent Variable: % of Special Education Suspensions</b>			
<b><u>Independent Variables @</u></b>			
% in Mental Retardation	.80**		
% in LD			1.60**
% in Emotionally Disturbed		.50**	
<i>Control:</i> % school-age	-.09	.32	-.70
<b>Adj R<sup>2</sup></b>	.80	.61	.82
<b>Dependent Variable: % of Out-of-School Suspensions</b>			
% in Mental Retardation	.65**	---	---
% in LD	---	---	.58*
% in Emotionally Disturbed	---	.29**	---
% Spec Ed Suspensions	.25**	.39**	.32**
% of Total Disabilities	.01	.02	-.17
<i>Control:</i> % school-age	.09	.32**	.28*
<b>Adj R<sup>2</sup></b>	.95	.92	.97
<b>Dependent Variable: Incarceration, 2006</b>			

Suspensions	.04	.03	.17
% of Total Disabilities	.29	-.18	.46*
Out-of-school Suspensions	.92**	.81**	.72**
<i>Control: % school-age</i>	-.30	.25	-.37
<b>Adj R<sup>2</sup></b>	.92	.87	.95

**Table 1d. Contextual Influences on Incarceration Rates:**

Dependent Variable: % in Residential Placement, 2006

	<u>Black</u>			<u>White</u>		
<b>School Context: "Other" Group</b>						
Black suspensions				-.63**	-.66**	-.66*
White suspensions	-.66**	-.63**	-.48*			
<b>Institutional Sequence</b>						
Punitive		-.13		.07	.07	
Paternal			.04			
<b>Political Culture</b>						
Moralistic			-.35**			
Traditionalistic						.05
<b>Adj R<sup>2</sup></b>	.43	.43	.51	.39	.37	.37

**II. Results of Fuzzy-Set Analyses****Table 2a. School Suspensions and Incarceration.**

		<u>Consistency</u>	<u>Coverage</u>	<u>N of Cases</u>
<b>A. <u>Special Education Suspensions:</u></b>				
<b>Black:</b>	MR	.913	.796	20
<b>White:</b>	ED	.872	.819	17
<b>Hispanic:</b>	LD	.871	.819	19
<b>B. <u>Out-of-School Suspensions:</u></b>				
<b>Black:</b>	MR +	.969	.848	14
	Spec Ed Suspensions	.884	.888	18

<b>White:</b>	ED	.893	.874	18
	Spec Ed Suspensions	.980	.685	17
<b>Hispanic:</b>	LD	.705	.982	11
	Spec Ed Suspensions	.651	.964	15

**C. Incarceration:**

<b>Black:</b>	Out-(of-School Suspensions)	.811	.951	17
<b>Hispanic:</b>	Out	.964	.740	12
	% Total Disabilities	.861	.849	13

**Table 2b. Institutional Sequence and Political Culture.**

<u>Race/Ethnic Category</u>	<u>Consistency/Coverage</u>	
<b>Black:</b> Black Out-of-School Suspensions + Punitive Sequence + Traditional Culture	.940	.636
<b>White:</b> White Out-of-School Suspensions + Paternal Sequence + Moralistic Culture	.975	.676
<b>Hispanic:</b> Hispanic Out-of-School Suspensions + Punitive Sequence + Individualistic Culture	.863	.431

**Table 2c. Contextual Factors *Reducing* Incarceration.**

<u>Race/Ethnic Category</u>	<u>Consistency/Coverage</u>	
<b>Black:</b> White Out-of-School Suspensions + Paternal Sequence + Moralistic Culture	.941	.636
<b>White:</b> Black Out-of-School Suspensions + Punitive Sequence + Traditionalistic Culture	.889	.681

**III. Comparison of States**

**Comparison of High and Low Incarceration States:**

**Table 3a. Regression Residuals:** [Dependent Variable: incarceration rates; Independent Variables: special education suspensions; out-of-school suspensions; % of total disabilities].

**HIGH** [actual rates significantly higher than predicted]

<b>Black</b>	<b>White</b>	<b>Hispanic</b>
Delaware	Alabama	New Mexico
Maryland	Florida	Vermont
Massachusetts	Maine	
Michigan	Montana	
New Jersey	North Dakota	
New York	Tennessee	



Pennsylvania  
Rhode Island

Texas

**LOW** [actual rates significantly lower than predicted]

<b>Black</b>	<b>White</b>	<b>Hispanic</b>
Alabama	Connecticut	Florida
North Dakota	Delaware	Kansas
Tennessee	Maryland	Texas
	Massachusetts	
	Michigan	
	Pennsylvania	
	Rhode Island	
	South Dakota	

**Summary:**

High Black / Low White: DE, MD, MA, MI, PA, RI

High White / Low Black: AL, ND, TN

High White / Low Hispanic: FL, TX

**Table 3b. Fuzzy-Set:** States with High Incarceration - by racial/ethnic group.

<b><u>Black</u></b>	<b><u>White</u></b>	<b><u>Hispanic</u></b>
Alabama	Arkansas	Arizona
Arkansas	Colorado	California
Connecticut	Indiana	Colorado
Delaware	Iowa	Connecticut
Florida	Idaho	Illinois
Georgia	Kansas	Kansas
Illinois	Kentucky	Massachusetts
Louisiana	Michigan	Nevada
Maryland	Minnesota	New Jersey
Michigan	Missouri	New Mexico
Minnesota	Montana	New York
Mississippi	Nebraska	Rhode Island
Missouri	New	Texas
North Carolina	Hampshire	Utah
New Jersey	North Dakota	
New York	Ohio	
Ohio	Oklahoma	
Oklahoma	Oregon	
Pennsylvania	South Dakota	
South Carolina	Tennessee	
Tennessee	Utah	
Texas	Vermont	
Virginia	Washington	
Wisconsin	West Virginia	
	Wisconsin	

## Wyoming

N = 24

N = 14

N = 25

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## Notes

- [1] Michelle Alexander emphasizes this point as well: “These stark racial disparities cannot be explained by rates of drug crime. Studies show that people of all colors use and sell illegal drugs at remarkably similar rates. If there are significant differences in the surveys to be found, they frequently suggest that whites, particularly white youth, are more likely to engage in drug crime than people of color” (Alexander, 2010, p. 7).
- [2] The principal set-theoretic method is QCA, or Qualitative Comparative Analysis. The development of this method has been considerable, from Ragin’s inaugural elaboration of crisp-sets (see Ragin, 1987) to multiple researchers employing fuzzy-sets.
- [3] Beyond the two most significant critiques, three claims are important as well: a) that the reduction of conditions and outcomes to binary values results in a loss of important information; b) that configurations that do not exhibit any relation to outcomes, the logical remainders, may nonetheless be theoretically significant; c) that the results that indicate significant configurations do not provide, in themselves, a theoretical interpretation of the causal dynamics (see Rihoux & Ragin, 2009, chapter 7).