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A window into racial and socioeconomic status disparities in preschool disciplinary action using developmental methodology

Terri J. Sabol[1,2], **Courtenay L. Kessler**[1,2], **Leoandra Onnie Rogers**[2,3], **Amelie Petitclerc**[4], **Jamilah Silver**[5], **Margaret Briggs-Gowan**[6], **Lauren S. Wakschlag**[2,7]

[1]The School of Education and Social Policy, Northwestern University, Evanston, Illinois.

[2]Institute for Policy Research and Institute for Innovations in Developmental Sciences, Evanston, Illinois.

[3]Department of Psychology, Northwestern University, Evanston, Illinois.

[4]Ecole de psychologie, Université Laval, Quebec City, Quebec, Canada.

[5]Department of Psychology, Stony Brook University, Stony Brook, New York.

[6]Department of Psychiatry, UConn Health, Farmington, Connecticut.

[7]Department of Medical Social Sciences, Feinberg School of Medicine, Northwestern University, Chicago, Illinois

Abstract

There are large differences in expulsions and suspensions on the basis of race starting in preschool and divergent explanations for their cause. The current study explores how developmental methodology can shed light on this vexing issue. We leverage two measures: (1) childcare provider complaints about children's behavior and their recommended disciplinary action (measured by parent report); and (2) observed disruptive behavior measured by a laboratory-based standardized observation tool, the Disruptive Behavior Diagnostic Observation Schedule (DBDOS), among a large, sociodemographically diverse sample of children (n = 430; mean age = 4.79 years). We identified three latent class profiles on the basis of race/socioeconomic status (SES) and found disparities in childcare provider complaints based on profile membership. More specifically, children classified in the *Black/Hispanic, poor* and *Black, nonpoor* profiles both had significantly higher childcare provider complaints compared with children in the *White/Hispanic, nonpoor* profile. By contrast, there were no differences in observed disruptive behavior based on race/SES profiles. Finally, childcare provider complaints in preschool were associated with lower cognitive

Address for correspondence: Terri J. Sabol, The School of Education and Social Policy, Northwestern University, Annenberg Hall Room 211, 2120 Campus Drive, Evanston, IL 60208-000. terri.sabol@northwestern.edu.

Author contributions

All authors developed the study concept and contributed to the current study design. T.J.S. drafted the manuscript with support from C.K. in the Methods section. C.K. conducted the data analyses under the supervision of T.J.S. Data collection and study design of the original MAPS study was led by L.W. with collaboration from M.B.-G. and A.P. All authors provided assistance with framing, interpretation of results, provided substantive revisions, and approved the final version of the manuscript for submission.

Supporting information

Additional supporting information may be found in the online version of this article.

Competing interests

The authors declare no competing interests.

performance in elementary school, above and beyond observed disruptive behavior in preschool and race/SES profiles. Implications for classroom practice and contributions to the national debate on school disciplinary policies are discussed.

Keywords

preschool; early childhood education and care; school discipline; race and socioeconomic status disparities; behavioral observations

Introduction

In the United States, there are large disparities in school discipline practices on the basis of race, even for very young children. A landmark study conducted almost a decade ago by the U.S. Department of Education, the Office of Civil Rights found that Black preschool-aged children were suspended and expelled at a rate three times greater than White students in publicly funded preschool programs.[1] This finding was replicated in the 2016 National Survey of Children's Health dataset, as well as several smaller studies on community-based programs and publicly funded preschool programs, suggesting a similar pattern among a range of childcare arrangements and settings.[2–4]

There has been a range of policy responses to address this "discipline gap" within the PreK–12 school systems. Many states (e.g., Connecticut, Minnesota, and Illinois) and some preschool programs (e.g., Head Start) now explicitly ban preschool expulsion for publicly funded programs. Within the K–12 system, alternatives to suspensions and expulsions, including positive behavioral intervention support and restorative justice approaches, have gained in popularity as a way to focus more on community building and conflict resolution, and less on exclusionary discipline practices.[5] Yet, reducing the number of suspensions and expulsions may not yield systematic and sustained change without better understanding the range of disciplinary practices that exist within preschool settings and the mechanisms that lead to the disparities within these disciplinary practices.

More specifically, the expulsion ban and alternatives to exclusionary discipline, while important, target only the most overt disciplinary actions by schools. This approach may miss the everyday, microlevel classroom disciplinary processes that may also affect children. In particular, there may be disparities in how often childcare providers complain about a child's behavior to parents, such as telling parents their child's behavior is problematic or discussing their concerns about whether the preschool should continue to care for the child. Biases in these more subtle and insidious behavioral evaluations are much less studied but could also be harmful to children. Indeed, decades of research demonstrates the powerful role that beliefs and expectations have in shaping children's later performance, particularly when children are young.[6,7] Childcare provider/teacher complaints about young students' behaviors may be related to exclusionary discipline practices, indicating a possible early step in how educators triage perceived misbehavior in classrooms. In other cases, they may not lead to exclusionary discipline, especially in cases where there are expulsion bans or pushes to reduce expulsions at the school, district, or state level, but could still interfere with children's learning. We contribute to the growing literature on preschool discipline

disparities by conceptualizing childcare provider complaints about children's behavior, as reported by parents, as part of the spectrum of relevant classroom discipline practices.

There are two major explanations in the field for why teachers' or childcare providers' complaints about children's behavior may vary based on the child's race. The first, situated in the structure of societal racism, is the *childcare provider bias explanatory framework,* which posits that some childcare providers/teachers have implicit biases that lead to negative attribution bias toward minoritized students.[8] For instance, in the school setting, childcare providers may attune more to the behaviors of Black students in anticipation of misbehavior or exhibit exaggerated responses to otherwise minor behavioral infractions. Past work has found that teachers pay more attention to and suggest more severe punishment for Black students compared with White students, even for the same behavior.[9,10] For instance, Gilliam and colleagues[11] tracked the eye gaze of preschool teachers watching videos of children and found that teachers spent significantly more time gazing at Black versus White students, even though none of the children demonstrated disruptive behaviors. Similarly, experimental work by Okonofua and Eberhardt[9] found that teachers were more likely to label a student a troublemaker and recommend more severe disciplinary consequences when their records were randomly assigned to have more stereotypically Black versus White names, suggesting that teachers' implicit biases may lead to inaccurate disciplinary action. Teacher/caregiver biases are dependent on the characteristics of the adults, with some evidence demonstrating that teachers are less likely to expel and have more positive perceptions of students when there is teacher–student racial match.[12,13]

The second argument for discipline disparities focuses more on children's behavior.[14] Specifically, a *child disruptive behavior explanatory framework* posits that child behavior problems differ across race, potentially the result of macroeconomic conditions, such as poverty, which heighten problem behaviors.[15,16] A paper by Wright and colleagues[17] used this framework to explore disparities in children's behavior problems. They find that Black students were much more likely to be suspended in eighth grade, but after controlling for teacher-reported behavior problems in elementary school, the racial gap in suspensions was no longer significant. The authors concluded that "differences in rates of suspension between racial groups thus appear to be a function of differences in problem behaviors that emerge early in life, that remain relatively stable over time, and that materialize in the classroom" (p. 263).[17]

Despite the fact that some studies have found that children's behaviors are predictors of receiving disciplinary action, misbehavior does not fully explain the rates of disparities in exclusionary discipline outcomes.[10] Indeed, a comprehensive review of articles published between 1990 and 2017 on K–12 public school discipline in the United States found that increased misbehavior is not the sole explanation for race-based disparities in discipline, instead finding that the policies, practices, and perspectives of childcare providers/teachers play a more important role in explaining disparities.[18] Yet, many state and federal policies still rely upon a child disruption framework as their basis for school discipline approaches. For instance, a 2018 Federal Commission Report from the U.S. Department of Education cited Wright and colleagues' findings to argue that discipline disparities are *not* in violation of federal civil rights laws (as suggested in an earlier 2014 report from the U.S. Departments

of Education and Justice) due to differences in reported behavior by race. Thus, the child disruption framework still plays an outsized role in policy contexts, despite its debunking in the empirical literature.

There are three major limitations of the literature on disparities in disciplinary action that this paper seeks to address. First, most past work on school discipline processes has focused on K–12 settings.[18] Although there is some emerging work on preschool settings,[8] it is much more limited in scope and depth compared with the research on the K–12 both in terms of characterizing the disparity (e.g., type of infraction, frequency of misbehavior, and disciplinary outcomes) and the potential explanatory mechanisms behind the disparities. Our study seeks to expand beyond this and focus on children's earliest disciplinary experiences in educational settings.

Second, most past work that has explored disparities in disciplinary factors has focused on either class- or race-based explanations for these disparities,[19] rather than accounting for the intersectionality across race and socioeconomic factors. There is some empirical work in the K–12 literature that finds that Black students continue to be more likely to be suspended/expelled compared with White students, even after controlling for socioeconomic status (SES).[10] In the current study, we seek to move beyond controlling for SES and employ a person-oriented approach of race and SES, which allows us to characterize the sample by identifying naturally occurring subgroups of individuals to account for the co-occurrence of multiple sociodemographic factors within an individual child.

Third, most past research on disciplinary processes relies on measures of children's disruptive behavior based on either parent or teacher/childcare provider report, each of which introduces different informant perspectives and biases. As a result, it is difficult to parse the effects of rater *bias* and "*true*" behavior problems due to shared method variance in prior research.[20,21] For instance, past work has found that teachers tend to overreport children's problem behaviors when there are high levels of the teacher–child conflict.[22] Moreover, a study on discipline referral records for over one million students in the K–12 system found greater disparities in subjective referrals by the teacher (e.g., defiance) versus objective referrals (e.g., truancy), suggesting a high degree of teacher bias in the teacher reports of student behavior problems.[23] Thus, the central issue with research on school discipline and exclusionary practices (e.g., suspensions) is that student behaviors that lead to those practices are typically not observed by researchers. Instead, they are reported by educators and thus subjected to educators' discretion and biases in the interpretation of perceived misbehavior. Studies have tried to work around this issue by using the student report of misbehavior among high school students (and found that Black students did not report more deviant behavior compared with White students), but student report measures would be challenging with young children.[24]

Our study seeks to better understand the relation between children's objective disruptive behavior compared with childcare provider complaints and exclusionary disciplinary action.

To do so, we leverage a laboratory-based standardized observation tool, the Disruptive Behavior Diagnostic Observation Schedule (DB-DOS), specifically designed to elicit

behavioral variability to differentiate normative from problematic misbehavior during early childhood.[25] Children's interactions with an examiner serve to simulate, in part, the classroom environment; the DB-DOS is correlated with, but independent of, the teacher report of children's behavior and captures children's patterns of behavior with nonparental adults.[20,21]

We draw on the DB-DOS paradigm as a more objective measure of child disruptive behavior to juxtapose with parent-reported childcare provider complaints. More specifically, we examine disparities based on race/SES profiles on two measures: (1) childcare provider complaints; and (2) observed disruptive behavior. We then explore the extent to which childcare provider complaints versus independent observations of children's disruptive behavior relate to children's cognitive performance in elementary school. Our broad goal is to understand the extent to which developmental methodology can inform the pressing question of how we work to explain and address disparities in preschool disciplinary practice.

Materials and methods

Participants

This study draws upon data from preschool-age children who took part in an intensive substudy of the Multidimensional Assessment of Preschoolers Study (MAPS). The original MAPS sample was a survey cohort of 1857 children aged 3–5 years recruited from pediatric primary care facilities in 2011–2014. A subsample was then selected for an intensive preschool-age laboratory-based visit which took place shortly after the initial recruitment (2011–2014; see Fig. S1 for a flowchart, online only).[26,27] A total of 430 individuals consented to participate in the additional intensive substudy visit to the lab (preschool visit) and had complete data on childcare provider complaints. For our predictive models, we further reduced our sample to 282 children who participated in the elementary school assessment (2014–2017; see Attrition Analysis section in the Supplementary Information, and Fig. S1, online only). In this model, we would be able to detect at least a 7.3% change in the R^2.

Ethical considerations

The Institutional Review Board at Northwestern University approved and monitored all study procedures, and all mothers provided written informed consent for themselves and on their child's behalf.

Sample characteristics in preschool

Our sample was diverse across race/ethnicity and income: 47.91% Black, 23.72% Hispanic, 20.00% White, and 8.37% multiracial/other race; 44.19% of our sample was characterized as poor (below the Federal Poverty Level (FPL); see Table S1, online only). All 430 children in our sample were in preschool or nonparental daycare. Most chil dren were in out-of-home school-based programs (71.63%), and the remaining children were cared for by either a babysitter or other nonparental caregiver (28.37%). Among the group in school (n = children were in public or private 308), children were in public or private center–based childcare

(83.77%), home-based/other childcare (6.17%), or kindergarten (10.06%) at the time of the preschool assessment. Children were on average 57.48 months (4.79 years) old.

Measures

The preschool lab-based visit included mother report on questionnaires, direct observation of children's behavior in interaction with an examiner, and direct assessments of cognitive and language performance. The elementary school assessment visit also occurred at the laboratory and included direct assessments of children's performance.

Childcare provider complaints (parent report).—The parent attending the intensive follow-up study visit completed the Family Life Impairment Scale (FLIS).[28] The FLIS is a 23-item parent-reported measure of impairment. More specifically, the original measure included items on child relations, child anxiety impairment, family/parent impairment, and childcare provider impairment. Our research team selected three items from the FLIS that were directly related to childcare provider complaints and disciplinary action: (1) "We often get complaints about his/her behavior from his/her teacher, babysitter, or school"; (2) "My child's teacher or babysitter has talked to me about whether s/her should continue to take care of my child"; and (3) "My child has been asked to leave the place s/he was going for school, childcare, or babysitting." A confirmatory factor analysis revealed adequate fit of this subscale ($\alpha = 0.514$; AIC = − 0.887; BIC 2164.659). We created a sum score of these items (weighted by the number of items that parents responded to; all children had responses for at least two of the three items within this subscale). Higher scores on the scale indicated more childcare provider complaints.

Observed disruptive behavior.—The DB-DOS is a structured laboratory observation where children interact with an unfamiliar examiner and a parent/caregiver during tasks designed to efficiently press for variations in emotional and behavioral regulation (see Supplementary Information for further details on the DB-DOS, online only).[27] For this study, we focused on the examiner-engaged context, which has been found to parallel children's behaviors and functioning with teachers or other nonparental adults who interact with children outside of the home.[20,21] The specific tasks for the examiner-engaged module include compliance "do" and "don't" tasks (e.g., sorting beads by color), disappointment/frustration (e.g., getting a remote for a car with no batteries), and social play (e.g., playing a marble maze toy together), which takes approximately 10–15 min to complete and has demonstrated strong psychometric properties (see Supporting Information for more details, online only).

Cognitive performance in elementary school.—At the elementary school assessment visit, children completed the Wechsler Abbreviated Scale of Intelligence (WASI), a short measure validated for assessing general intelligence for children six and up.[29] The WASI includes two modules, focusing on vocabulary and matrix reasoning. In the vocabulary subtest, examiners present stimulus words to participants and ask them to state each word's meaning to assess children's word knowledge/comprehension and verbal concepts. Matrix reasoning asks children to examine an incomplete matrix and then select the missing piece from five response options to assess children's fluid, nonverbal reasoning. These subtests

are associated with, but distinct from, children's literacy and math performance.[30,31] Scores from both modules are combined for a total score reflecting cognitive performance.[32] A standardized score (*t*-score) was used for the WASI outcome in our analysis.

School functioning in elementary school.—At the elementary school assessment, parents completed the MacArthur Health and Behavior Questionnaire (MHBQ).[31] To assess school engagement, we used an existing 7-item subscale that asked parents questions about their child's current feelings about school (e.g., excited, upset, interested, and frustrated). To assess school problems, we drew on two items: "How much has your child missed school as a result of (their behaviors/behavior problems)?" and "How much have your child's grades gone down as a result of (their behaviors/behavior problems)?" For all items, parents answered on a 4-point Likert scale, ranging from "not at all" (1) to "quite a bit" (4). For school engagement, we averaged the items to create a composite. The two school problem behavior items were dichotomized to child behavior affecting school (= 1) versus child behavior not affecting school (= 0). The internal consistency, test–retest reliability, and discriminant validity of this measure have been established.[31]

Race/ethnicity and SES.—Race/ethnicity was defined as white non-Hispanic, Black (including Hispanic and non-Hispanic), non-Black Hispanic, and multiracial/other race/ethnicity (including Asian). To measure the SES of the child's family, we include a range of indicators: household income, maternal employment, marital status, and level of education. Income was dichotomized as poor or not poor, based on whether reported income was above or below the FPL for family size.

Cognitive and language performance in preschool.—We also included a set of cognitive and language performance measures as controls, which included: the Candy Game task,[32] the Differential Ability Scales (DAS) Picture Similarities subtest,[33] and the Clinical Evaluation of Language Fundamentals (CELF) Preschool Expressive Vocabulary subtest.[34]

Analytic approach

Deriving race/sociodemographic profiles.—To assess the extent to which we observe disparities in childcare provider complaints or observed disruptive behavior, we empirically derive race/ethnicity and SES profiles using latent class analysis (herein referred to as race/SES profiles). To derive the profiles, we include child's race and family characteristics (e.g., family is poor; and maternal employment, education, and marital status). Overall, we identified a three-class model with adequate fit (AIC = 3111.788; BIC = 3205.679; see Table S2, online only). Profile A, which we label as the *Black, nonpoor profile*, was distinguished by high proportions of Black children (94.12%), a small proportion of Hispanic children (5.88%), and no children from poor background (prevalence = 19.77%). The *Black/Hispanic, poor profile* (Profile = B) was the largest profile, representing 44.19% of the sample, and was distinguished by high proportions of Black (66.32%) and Hispanic (23.68%) children, and a small percentage of multiracial/other children (10.00%). All children in this profile (100%) were from poor backgrounds. The *White/Hispanic, nonpoor profile* (Profile C; prevalence = 36.05%) was distinguished by high proportions of White (55.48%) and Hispanic children (33.55%) and no children from poor backgrounds.

Main analytic models.—For our main research question, we first examine the association of the race/SES profiles with both childcare provider complaints and observed disruptive behavior using ordinary least squares (OLS) regressions (across two models; with Profile C always as the omitted group). We also build a series of models using OLS to explore the extent to which childcare provider complaints versus observed disruptive behavior relates to cognitive performance and school functioning (based on parent report) in elementary school. For predictive validity, we use multiple imputation with chained equations to generate 50 complete samples and pool those data for our final analyses, but do not impute the main outcome measure (WASI); the final sample is $n = 282$ (65.58%; for attrition analyses for the different samples, see Supplementary Information, online only). Further details on the analytic approach can be found in the Supplementary Information (online only).

Subsample analysis.—For a subsample of children ($n = 73$), we also have information on the childcare provider's race/ethnicity. Given the literature on how caregivers' own backgrounds affect their reporting of children's behavior, especially in terms of racial/ethnic match with children, we sought to examine if our findings replicated when we controlled for childcare provider–child racial match. We found that the proportion of children within each racial group for this subsample largely mirrored the full sample; the percentage of children in each racial group for the childcare race subsample versus the full sample was: 46% versus 48% Black; 28% versus 24% Hispanic; and 24% versus 20% White. Within this subsample, we found that the majority of children had racial/ethnic match with their childcare providers (83.12%), with some variation across racial groups (e.g., 50% match for Hispanic, 89% match for Black, and 100% match for White children). We then test our main research questions with this sample, with and without controlling for racial/ethnic match.

Results

Our first research questions explored the extent to which (1) childcare provider complaints to parents about children's behavior and recommended disciplinary action and (2) children's observed disruptive behavior (DB-DOS) varied across the three race/SES profiles. Preliminary analyses demonstrated that the correlation between childcare provider complaints and observed disruptive behavior was small, albeit significant ($r = 0.126$; $P = 0.019$, controlling for age and sex). The magnitude and statistical significance of the correlation varied across the race/SES profiles. More specifically, the correlation among children in the White/Hispanic nonpoor profile (Profile C) was statistically significant ($r = 0.241$; $P = 0.011$), the correlation was nonsignificant whereas for children in the Black/Hispanic poor profile (Profile B; $r = 0.083$; $P = 0.299$) and children in the Black nonpoor profile (Profile A; $r = 0.043$; $P = 0.722$). In addition, childcare provider complaints (reported by parents) and the DB-DOS were related to, but distinct from, children's concurrent cognitive and language performance in preschool (Table S3, online only). These results suggest that childcare providers' complaints about behaviors are only slightly related to more objective measures of children's disruptive behavior, confirming the subjectivity of childcare provider complaints. Moreover, we find that the magnitude of the correlation between childcare provider complaints and observed disruptive behavior is smaller for

profiles typified by Black/Hispanic students (Profiles A and B) compared with the profile with majority White children, suggesting racial bias in childcare provider complaints.

For our main analysis, we found that childcare provider complaints varied significantly across the three profiles (see Fig. 1 and Table 1). In Figure 1, we presented the adjusted standardized means of childcare provider complaints about each profile after controlling for child age and sex. We then tested whether the standardized means differ from one another based on *t*-tests. We found that children in the Black, nonpoor profile (Profile A) had higher childcare provider complaints compared with children in the White/Hispanic nonpoor profile (standardized mean difference between Profiles B and C = 4.270, $t = -4.29$, $P < 0.001$). Children in the Black/Hispanic poor profile (Profile B) also had higher childcare provider complaints compared with children in the White/Hispanic nonpoor profile (standardized mean difference between Profiles A and C = 0.239; $t = -2.08$, $P = 0.038$). There were no differences in childcare provider complaints between Profiles A and B.

Results from an OLS regression confirmed these disparities, demonstrating that children in the Black, nonpoor profile (Profile A) and children in the Black/Hispanic, poor profile (Profile B) had significantly higher childcare provider complaints as compared with children in the White/Hispanic, nonpoor profile (Profile A versus C; $b = 0.154$, 95% CI: 0.008–0.300; $P = 0.039$; $\beta = 0.100$; Profile B versus C; $b = 0.261$, 95% CI: 0.142–0.381; $P < 0.001$; $\beta = 0.212$) when controlling for age and sex (Table 1, Model 1). The results were robust when we controlled for observed disruptive behavior on the DB-DOS (results presented in Table 1, Model 2). They were also largely consistent within the subsample with data on childcare provider racial match; $n = 73$ (Table S4, online only). The only exception was that Profiles A and C were not statistically significantly different from one another; this finding was observed in this small subsample whether or not we controlled for racial match. Collectively, these results suggest disparities in childcare providers' complaints about student behaviors that are not explained by differences in children's observed behaviors.

Children's observed disruptive behavior, as measured by the DB-DOS, did not vary across the race/SES profiles. This pattern of null findings was consistent in models when we only controlled for child's age and sex and in models when we added a control for childcare provider complaints (Models 1 and 2 in Table 1). Findings were robust when restricted to the out-of-home sample only ($n = 308$) as well as when we controlled for childcare provider racial match within the subsample ($n = 73$; Table S4, online only). When we examined differences in childcare provider complaints and children's observed disruptive behavior based on more simplistic categories of race or SES (e.g., Black versus White versus Hispanic children; poor versus nonpoor children), we observe a similar pattern (see Table S5, online only). On the basis of ANOVAs and *t*-tests, Black children had higher rates of childcare provider complaints compared with White children ($M = 0.37$ versus 0.13); poor children had higher childcare provider complaints compared with nonpoor children ($M = 0.73$ versus $M = 0.49$). There were no differences in children's observed disruptive behavior for any of the simplistic race/SES variables. Overall, we consistently observe that there were no differences in children's interactions with an examiner, as rated by trained coders, across the race/SES profiles.

We next examined the extent to which (1) childcare provider complaints and (2) children's observed disruptive behavior (DB-DOS) were associated with cognitive performance in elementary school using ordinary least squared regressions ($n = 282$). We tested the relationship with the overall WASI composite (Table 2; and Table S5, online only), as well as the two subscales (WASI vocabulary and matrix reasoning in Table S6, online only). Overall, we found that childcare provider complaints were associated with school-age outcomes, above and beyond observed disruptive behavior (on the DB-DOS), race/SES profiles, child age, and sex. More specifically, as demonstrated in Table 2, more childcare provider complaints were related to lower scores on the WASI composite ($b = -3.362$, 95% CI: −5.738 to −0.987; $P = 0.006$; $\beta = -0.140$) after controlling for observed disruptive behavior, child age, sex, and race/SES profiles. Results were consistent across a range of different controls, including when we control for the individual variables that were included in the race/SES profiles (see Table S6, online only, for results with varying controls). This same pattern was observed with the WASI subscales, where childcare provider complaints were related to lower scores on the WASI vocabulary ($b = -2.261$, 95% CI: −4.135 to −0.385; $P = 0.018$; $\beta = -0.128$) and matrix reasoning ($b = -1.822$, 95% CI: −3.292 to −0.352; $P = 0.015$; $\beta = -0.122$; see Table S7, online only). We also tested this relation with our childcare provider subsample, which was further reduced in size when we predicted WASI scores ($n = 59$). We did not observe any relation between childcare provider complaints and the WASI within the subsample. However, this occurred whether or not we included the childcare provider racial match variable or not, suggesting it may be due to issues with power and sample, rather than the racial match variable (Table S8, online only).

Children's observed disruptive behaviors were not associated with any of the WASI outcomes (Table 2; and Table S7, online only) ($b = 0.666$, 95% CI: −1.368 to 2.699; $P = 0.519$; $\beta = 0.036$). Children's race/SES profiles were associated with disparities in cognitive performance in elementary school, where children in the Black/Hispanic poor ($b = -8.268$, 95% CI: −11.789 to −4.748; $P < 0.001$) and Black nonpoor ($b = -4.625$, 95% CI: −8.631 to −0.620; $P = 0.024$) profiles had lower cognitive performance scores compared with the White/Hispanic, nonpoor profile.

We then conducted a subgroup analysis for each of our race/SES profiles and examined the extent to which childcare provider complaints and children's observed disruptive behavior were associated with cognitive performance in elementary school among each of the profiles (see Table S9, online only). There was no association between childcare provider complaints and the WASI composite among children in the White/Hispanic, nonpoor profile (Profile C; $b = -1.587$, 95% CI: −6.488 to 3.315; $P = 0.521$) or among children in the Black, nonpoor profile (Profile A; $b = -5.005$, 95% CI: −11.388 to 1.379; $P = 0.121$). However, *more* childcare provider complaints were associated with *lower* WASI composite scores for children in the Black/Hispanic poor profile (Profile B; $b = -4.095$, 95% CI: −6.908 to −1.281; $P = 0.005$).

Childcare provider complaints were also associated with later parent-reported problems in school functioning, including a higher likelihood of (1) declining grades as a result of behavior problems ($OR = 2.858$, 95% CI: 1.590–5.139; $P = 0.001$) and (2) missing school as a result of behavior problems ($OR = 2.905$, 95% CI: 1.670–5.054; $P < 0.001$; see Table

S10, online only). Childcare provider complaints were also associated with lower school engagement in elementary school (b = 0.195, 95% CI: −0.332 to −0.068; P = .0.005; β = −0.213; see Table S10 online only). Collectively, our results suggest that childcare providers' subjective ratings are associated with lower cognitive performance and school engagement even after accounting for more objective measures of children's disruptive behavior.

Discussion

Past studies have found substantial differences in the rates of expulsions and suspensions based on race starting in preschool.[1] The current study explored the extent to which developmental methodology can shed light on this vexing issue within the preschool context. More specifically, we leveraged measures of childcare providers' complaints about children's behavior and recommended disciplinary action (based on parent report) as well as direct observations of children's disruptive behaviors. We found that childcare provider complaints varied systematically based on the child's race/SES background, differences that were not seen in directly observed behavior in the laboratory, identified by raters with no prior knowledge of the child. These findings are particularly concerning as childcare provider complaints were related to children's subsequent cognitive performance in elementary school. Our results demonstrate the subjectivity of childcare provider complaints and indicate disparities in childcare providers' perceptions of behavior and actual behavior on the basis of the children's race/SES.

Most past work understanding school discipline processes has been done on K–12 systems. Our study explicitly focuses on young children's earliest school environments and builds on past research that demonstrates racial disparities in preschool expulsions.[11] Our results suggest that there are disparities in more micro-level classroom disciplinary processes—the frequency with which childcare providers complain to parents about their child's behavior or question the child's suitability for school, even when children have similar observed disruptive behaviors. Our profile approach to typify race/SES allowed us to uncover that these disparities are likely driven by biases related to race, particularly for Black children. More specifically, children in the Black *poor* or Black/Hispanic *non-poor* profile received more complaints about their behavior and recommendations for disciplinary action compared with the White/Hispanic nonpoor profile, suggesting differences based on race, as opposed to class. When we examine race alone, we only observed differences between Black and White children and not Hispanic and White children. This finding is similar to past research that finds Black children experience the highest rates of suspensions and expulsions compared with other racial/ethnic groups.[1]

Conversely, there were no differences in children's observed disruptive behavior across the race/SES profiles, and in fact, the correlation between childcare provider complaints and observed disruptive behavior was quite low. This is aligned with past work that employs different methodology (e.g., the student report of behavior problems) and older samples.[24] Importantly, the correlation between childcare provider complaints and observed disruptive behavior for children in the White/Hispanic group was twice the size in magnitude compared with the correlation for children in the Black/Hispanic, poor and Black, nonpoor

profiles. Collectively, these results confirm past research in the K–12 literature in which there is little evidence for a *child's disruptive behavior framework*. In particular, our results are in direct contrast to Wright *et al.*'s conclusion, which states that racial disparities are "likely produced by preexisting behavioral problems of youth that are imported into the classroom, that cause classroom disruptions, and that trigger disciplinary measures by teachers and school officials."[17]

Our main contribution is leveraging more objective measures to highlight the biases in the adults' report of student misbehavior. We posit that the differences between our findings and Wright *et al.* are due to varying measurement approaches, where their study relied on adult-reported measures of child behavior problems, and our paper used direct, independent observations of disruptive behaviors. This difference may reflect adult biases in the interpretation of perceived misbehavior. Yet, the difference between the results from our paper and Wright's paper has important policy implications given the focus on the child disruptive behavior framework in policy (e.g., 2018 Federal Commission Report from the U.S. Department of Education that uses the child disruptive framework as a guiding framework for school discipline policies, citing Wright's paper).[17] Similar to our results, countless studies have consistently found that disparities in disciplinary infractions are not solely explained by differences in behavioral problems but rather reflect the biases, perceptions, and practices of educators.[18,35,36] Moreover, a recent replication study of Wright *et al.*'s findings suggested serious issues with their analysis (e.g., selection bias to differences in sample sizes); once accounting for these issues, problem behaviors no longer accounted for the racial suspension gap.[37]

Notably, in our study, we find that these early disparities in teachers' perceptions of student misbehavior have long-lasting associations with their school engagement and cognitive outcomes. Indeed, we found that childcare provider complaints were associated with children's cognitive performance in elementary school. Moreover, parents were more likely to report that children had problems in school functioning in elementary school, including lower school engagement as well as a higher likelihood of missing school and/or declining grades due to behavior problems when children experienced higher levels of childcare provider complaints in early childhood.

Our results on the cascading effect of childcare provider complaints in early childhood on later outcomes are consistent with past work with older students suggesting the long-term effect of school discipline.[38] Using data from in-depth interviews with Black students in middle school, Kennedy-Lewis and Murphy found that students reported an iterative cycle of labeling, where labeling from teachers and previous punishment led to more frequent punishment over the years leading to a negative feedback loop over time.[39] Moreover, past work in elementary and middle schools found that exclusionary discipline practices was related to negative changes in students' academic identities, perceptions of adults in school, and school trust and connection, which, in turn, interfered with their learning over the long term.[40] Our results with younger children suggest a similar pattern, where teachers' early perceptions about children may shape children's own beliefs and expectations about themselves and their connection to the school.

Our subgroup analyses revealed an especially concerning pattern, where the relation among childcare provider complaints and WASI scores was found only among children in the Black/Hispanic, poor profile. As shown in the previous research, it is likely that teachers, beyond any individual differences, may expect more negative behavior from Black students, watching them more intently and anticipating problems with their behavior,[11,41] supporting a *teacher bias framework*. This may be an artifact that children in this profile also had the highest level of childcare provider complaints, but may also suggest that childcare provider complaints are a particularly troubling risk factor for Black, poor children given the long-lasting relation to performance in elementary school.

Our study does have limitations. First, the childcare provider complaints measure was based on parent report. Future work should examine the extent to which the parent report of childcare providers' complaints is related to the teacher or school report of the same classroom processes and/or related to direct observations of children's behaviors in the classroom. Second, we know very little about childcare providers or schools in our sample. Past work has found that school climate, teacher–student racial match, and a host of other school- and teacher-level factors influence school discipline practices[13,18,42,43] and perceptions of students' aptitude and performance. We were able to control for the childcare provider's race in a subsample, but it would be much better to have a larger sample. Moreover, our subsample was largely typified by a high degree of the childcare provider's racial match, which may have limited our ability to examine how the match operates given the lack of variability. Better understanding childcare providers' personal backgrounds and school characteristics, as well as how these connect to their complaints about children's behavior and recommendations for disciplinary action, is a critical area of future work. Third, despite the significant relationship between childcare provider complaints and elementary school performance, these analyses are by no means causal. Further work is needed to understand the causal mechanisms that undergird disparities in teachers' complaints about children's behaviors and the implications for children's subsequent academic performance. Fourth, our main outcome measure in elementary school (WASI) is a measure of general cognitive skills rather than a measure of domain-specific academic performance (e.g., reading or math skills). We also include parent-reported measures of school engagement, attendance, and grades, but future studies should test these findings with a broader battery of direct assessments across multiple domains. Fifth, while we did account for the intersectionality across SES domains, we did not account for other domains of intersectionality. For example, past work in elementary school has found that teachers disproportionately positioned Black boys with academic disabilities as having difficult behavior.[44] While it may be challenging to study disability issues in preschool given the low rate of prevalence at this age (around 6%),[45] future work may continue to push the boundaries of intersectionality across multiple dimensions and potentially oversample on key domains (e.g., disability status) to be able to test these questions. Lastly, while the DB-DOS has demonstrated ecological validity, it is an artificial "misbehavior induction" paradigm, which has its own sources of error as a snapshot of behavior.[27] Replicating and extending these findings with actual classroom observations would be an important avenue for future investigation. In terms of implications, our findings suggest that the current policy approach of banning preschool expulsions is a step in the right direction. However, policy

bans should not be the only approach as they only address the final endpoint and not the processes that led to exclusionary discipline in the first place. For example, a state ban of school suspensions for truancy in K–12 schools in Arkansas did not lead to improved attendance for truant students, suggesting more holistic approaches are needed.[46] Indeed, Welsh highlights the need for schools to account for the multiple ways in which personnel, programs, and policies interact to produce disciplinary disparities.[47] In this comprehensive approach, each individual possible solution, such as a policy to ban preschool expulsions or implementing a program like positive behavioral intervention support, is considered within the multiple levels of the school ecology.

The results from the current study suggest the importance of attuning to the personnel in the classroom, namely, childcare providers/teachers. Our findings suggest that disparities in more microclassroom processes, such as childcare provider/teacher complaints, reflect a degree of bias given the lack of correlation with objective measures of disruptive behavior. These biases and perceptions interfere with children's positive learning experiences in school. Schools need to attend explicitly to issues of biases to address racial inequities in school settings.[48] Pairing observational methodology with other state-of-the-science methods, such as the eye-tracking approach used in the Gilliam *et al.* study,[11] may provide further insight about the substrates of implicit bias patterns and ways to offer training to educators to attenuate it.[49,50] A comprehensive strategy would target differential selection practices that might lead teachers to complain more about Black students (despite the fact that they have the same behaviors as White children), as well as the differential processing practices that might lead teachers to punish Black students differently than White students.[51] A multitiered approach that focuses on coherence across programs, policies, and personnel is likely to be the most effective strategy to combat race-based disparities in school discipline.[47,52]

The issue of preschool disciplinary action disparities has troubled educators for decades, but surprisingly, developmental methodologies have not yet been applied to understand this phenomenon. Overall, we find disparities in childcare providers' complaints about children's behavior and recommended disciplinary action, which, in turn, are related to children's educational opportunities. There is much more to explore to better understand school discipline processes in preschool settings and opportunities for intervention to redress race-based disparities. Our goal was to take the first step in highlighting how developmental approaches may allow us to better understand discipline disparities for our youngest learners.

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Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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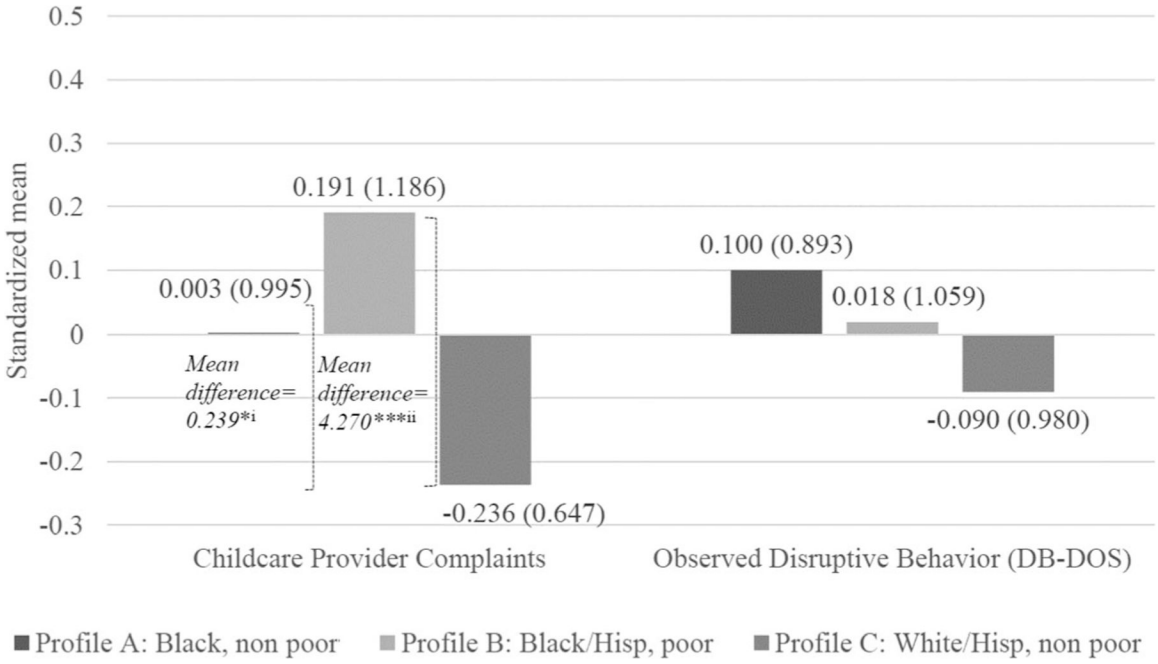

Figure 1.

Comparisons of the standardized means of childcare provider complaints and children's observed disruptive behavior across latent race/SES profiles ($n = 430$). The figure presents standardized means (and standard deviations in parentheses). Results are based on adjusted t-tests controlling for child age and sex. [i]Difference between Profiles A and C,* $P = 0.039$. [ii]Difference between Profiles B and C, *** $P < 0.001$.

Table 1.

Relation among race/class profiles and childcare provider complaints and observed disruptive behavior (n = 430)

	Childcare provider complaints								Observed disruptive behavior							
	Model 1				Model 2				Model 1				Model 2			
	b	95% CI	*P*	β	*P*	95% CI	*P*	β	*b*	95% CI	*P*	β	*b*	95% CI	*P*	β
Black/Hispanic, nonpoor (Profile A)	0.154	(0.008 to 0.300)	0.039	0.100	0.144	(−0.002 to 0.291)	0.053	0.094	0.111	(−0.095 to 0.318)	0.289	0.055	0.091	(−0.115 to 0.297)	0.386	0.045
Black/Hispanic, poor (Profile B)	0.261	(0.142 to 0.381)	<0.001	0.212	0.255	(0.134 to 0.375)	<0.001	0.207	0.077	(−0.105 to 0.259)	0.408	0.047	0.042	(−0.141 to 0.225)	0.651	0.026
Age (months)	0.001	(−0.005 to 0.007)	0.649	0.025	0.004	(−0.002 to 0.010)	0.207	0.073	−0.030	(−0.038 to −0.022)	<0.001	−0.411	−0.031	(−0.038 to −0.023)	<0.001	−0.414
Child is male	0.148	(0.036 to 0.260)	0.010	0.121	0.123	(0.006 to 0.240)	0.040	0.100	0.279	(0.129 to 0.429)	<0.001	0.173	0.259	(0.107 to 0.412)	0.001	0.161
Childcare provider complaints	–	–	–		–	–	–		–	–	-		0.132	(−0.014 to 0.278)	0.077	0.100
Observed disruptive behavior (DB-DOS)	–	–	–		0.090	(−0.014 to 0.194)	0.088	0.119	–	–	–	–	–	–	–	–

Note: Observed disruptive behavior = the Disruptive Behavior Diagnostic Observation Schedule (DB-DOS).

Table 2.

Relation among childcare provider complaints, observed disruptive behavior (DB-DOS), and children's cognitive performance in elementary school, full sample (n = 282)

	Cognitive performance in elementary school (WASI)			
	b	**95% CI**	***P***	**β**
Childcare provider complaints	−3.362	(−5.738 to −0.987)	0.006	−0.140
Observed disruptive behavior (DB-DOS)	0.531	(−1.011 to 2.522)	0.599	0.028
Response reversal	6.477	(−5.561 to 18.516)	0.336	0.062
Picture similarity	0.108	(0.009 to 0.207)	0.033	0.147
Expressive vocabulary	0.662	(0.438 to 0.886)	<0.001	0.385
Age (months)	−0.207	(−0.382 to −0.032)	0.021	−0.132
Child is male	−1.416	(1.469)	0.336	−0.048
Black/Hispanic, poor (Profile B)	−4.690	(−8.731 to −0.649	0.023	−0.128
Black/Hispanic, nonpoor (Profile C)	−7.741	(−11.262 to −4.219)	<0.001	−0.264
R^2	0.391			

Note: Childcare provider complaints = childcare providers' complaints about children's behavior and recommended disciplinary action (parent report).
DB-DOS, Disruptive Behavior Diagnostic Observation Schedule; WASI, Wechsler Abbreviated Scale of Intelligence composite score.