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Using Dyadic Observation to Explore Equitable Learning Opportunities in Classroom Instruction

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Abstract: Because of poverty, many children do not receive adequate prenatal care, nutrition, or early childhood education. These inequities combine to ensure that many students enter school with considerably less academic content knowledge and skills for learning than their peers. Teachers and schools did not create these gaps, but they must address them. The impact of schools in reducing gaps has been explored for decades only to yield inconsistent findings. One possible reason for these contradictory results is because these studies ignore classroom process. We argue for the inclusion of *process* in research on opportunity and achievement gaps to better articulate if schools provide inequitable learning opportunities. Further, we argue for *dyadic* (teacher to individual student) measurement of classroom process because commonly-used observation instruments only measure teachers' interactions with the whole class. These instruments obscure differential teacher treatment that may exist in some classrooms. To improve policy and practice, we call for supplementing extant measures of teachers' whole-class interactions (process) and student outcome (product) measures

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with those that measure dyadic interactions to learn *how* opportunities to learn in classrooms and schools are distributed among students to reduce, sustain, or enhance learning gaps.
Keywords: opportunity gap; achievement gap; classroom observation; equity; teacher-student interactions; bias

Usar la observación diádica para explorar oportunidades de aprendizaje equitativas en la instrucción en el aula

Resumen: Debido a la pobreza, muchos niños no reciben atención prenatal, nutrición o educación infantil adecuadas. Estas desigualdades se combinan para garantizar que muchos estudiantes ingresen a la escuela con un conocimiento de contenido académico y habilidades para el aprendizaje considerablemente menores que sus compañeros. Los maestros y las escuelas no crearon estas brechas, pero deben abordarlas. El impacto de las escuelas en la reducción de las brechas se ha explorado durante décadas solo para producir hallazgos inconsistentes. Una posible razón de estos resultados contradictorios es que estos estudios ignoran el proceso del aula. Abogamos por la inclusión del proceso en la investigación sobre las brechas de oportunidades y logros para articular mejor si las escuelas brindan oportunidades de aprendizaje no equitativas. Además, abogamos por la medición diádica (de profesor a alumno individual) del proceso del aula porque los instrumentos de observación de uso común solo miden las interacciones de los profesores con toda la clase. Estos instrumentos oscuros tratamientos diferenciados por parte del profesorado que pueden existir en algunas aulas. Para mejorar las políticas y la práctica, pedimos complementar las medidas existentes de las interacciones de los maestros con toda la clase (proceso) y las medidas de resultados de los estudiantes (producto) con aquellas que miden las interacciones diádicas para aprender cómo las oportunidades de aprender en las aulas y las escuelas se distribuyen entre los estudiantes para reducir, mantener o mejorar las brechas de aprendizaje.
Palabras-clave: brecha de oportunidades; brecha en el rendimiento; observación en el aula; capital; interacciones profesor-alumno; parcialidad

Usando a observação diádica para explorar oportunidades de aprendizagem equitativas na instrução em sala de aula

Resumo: Devido à pobreza, muitas crianças não recebem atendimento pré-natal, nutrição ou educação infantil adequada. Essas desigualdades se combinam para garantir que muitos alunos ingressem na escola com consideravelmente menos conhecimento do conteúdo acadêmico e habilidades de aprendizagem do que seus colegas. Os professores e as escolas não criaram essas lacunas, mas devem resolvê-las. O impacto das escolas na redução de lacunas tem sido explorado por décadas apenas para produzir resultados inconsistentes. Uma possível razão para esses resultados contraditórios é porque esses estudos ignoram o processo de sala de aula. Defendemos a inclusão do processo na pesquisa sobre lacunas de oportunidade e desempenho para melhor articular se as escolas oferecem oportunidades de aprendizagem desiguais. Além disso, defendemos a medição diádica (professor para aluno individual) do processo de sala de aula porque os instrumentos de observação comumente usados medem apenas as interações dos professores com a classe inteira. Esse instrumentos tratamento diferencial obscuro do professor que pode existir em algumas salas de aula. Para melhorar a política e a prática, pedimos medidas suplementares de interações dos professores com toda a classe (processo) e medidas de resultados do aluno (produto) com aquelas que medem as interações diádicas para aprender como as

oportunidades de aprendizagem em salas de aula e escolas são distribuídas entre os alunos para reduzir, manter ou aumentar as lacunas de aprendizagem.
Palavras-chave: lacuna de oportunidade; lacuna de desempenho; observação de sala de aula; capital; interações professor-aluno; tendência

Using Dyadic Observation to Explore Equitable Learning Opportunities in Classroom Instruction

Because of factors such as poverty and residential housing segregation, some students enter kindergarten with significant academic disparities (Kuhfeld et al., 2021; von Hippel et al., 2018). Schools alone cannot solve all problems caused by poverty, inequality, and discrimination. Yet, schools must deal with these vast differences in learners. The impact of schools in reducing learning gaps between Black and white students or rich and poor students is a question that social scientists have examined for decades. This literature, although using sophisticated designs and large samples, has yielded inconsistent and sometimes contradictory information (Hanushek et al., 2019; Hashim et al., 2020; Kuhfeld et al., 2021; Quinn et al., 2016; Reardon, 2011, 2020; Stanford Center for Education Policy Analysis [SCEPA], n.d.; von Hippel et al., 2018). One possible reason for these conflicting results is because classroom process is typically not included in these studies minimizing possibilities to move beyond correlational to causal conclusions (Kuhfeld et al., 2020). Yet, there is wide agreement that gaps appear early, persist, exist across all subject areas, and have increased as a result of COVID-19 (Barton & Coley, 2010; Coleman et al., 1966; Hanushek et al., 2019; Kuhfeld et al., 2020; McKinsey & Company, 2020; Morgan et al., 2016; Slavin & Inns, 2021).

In exploring classroom inequality, some educational researchers have found that teachers' implicit racial biases affect their practice (Kumar et al., 2015), such that minoritized students are sometimes treated less positively than majority students (Carlana, 2019; Carter Andrews et al., 2019; Chin et al., 2020; Copur-Gencturk et al., 2019; Quinn, 2017; see Denessen et al., 2020 for a review) and experience: fewer opportunities to participate in classroom activities (DaSilva Iddings, 2005), less positive relationships with their teachers (Sullivan et al., 2015), more negative feedback (Scott et al., 2019), and more disciplinary referrals, especially for Black students (Santiago-Rosario et al., 2021). Evidence that some teachers interact more favorably with students they believe to be more or less capable has long been documented in the teacher expectation effects research (Brophy & Good, 1970; Rubie-Davies, 2006; Weinstein, 2002; for reviews of this literature, see Good et al., 2018, Johnson et al., 2019, and Wang et al., 2019), particularly for students who vary by achievement level (Brophy & Good, 1970; Hoehn, 1954; Rubie-Davies, 2014), socioeconomic status (Friedman, 1976; Rjosk et al., 2014; Stipek, 2004), ethnicity and race (Ford, 2014; Grissom & Redding, 2015; Katz, 1970; Kleinfeld, 1975; Kolluri, 2018; Morris & Perry, 2017; Skiba et al., 2011; Stipek, 2004), immigration or migrant status, country of origin, or language background (Laosa, 1977; Mohr & Mohr, 2007; Ortega et al., 2020; Sullivan et al., 2015), special education status (Bulgren & Carta, 1992; Pit-ten & Glock, 2018), and gender (Gansen, 2018; Irvine, 1985; Morris & Perry, 2017). Recent research in the teacher implicit bias paradigm has shown that over time, teacher education and professional development efforts have not altered the fact that in some classroom students receive less support and opportunity to learn. However, teacher expectations whether explicit or implicit only influence students if teachers act on them, underscoring the importance of classroom observation. Particularly promising are findings from teacher expectation research that suggest that knowledge about differential expectations and practices can be used to make classroom interaction more equitable and improve achievement (de Boer et al., 2018; Rubie-Davies & Rosenthal, 2016).

Then and Now: A Disconnect Between Teacher Evaluation and Research on Teaching

Despite evidence that the quality of teacher-student interaction patterns can differ substantially *within* classrooms, recent and current teacher evaluation practices completely ignore these potential differences. Reform efforts (e.g., Race to the Top) that mandated that final teacher performance be classified using multiple rating categories has helped maintain and perhaps increased the dominant use of whole-class observation instruments (Kim & Sun, 2020) because such instruments align with policy as whole-class instruments typically use rubrics to differentiate teaching practice using multiple rating categories. However, this indifference to within-classroom opportunities for learning is a clear illustration of a disconnect between research and policy/practice. Whole-class observation systems make it impossible to determine if individual students' classroom opportunities are related to their end-of-year achievement scores. This is concerning if we consider that teachers' implicit biases relate to disciplinary gaps and other opportunity gaps that may, in turn, lead to achievement gaps (Chin et al., 2020; Gopalan, 2019; Pearman et al., 2019; Van de Bergh et al., 2010). This inattention to issues of equity in teacher evaluation (and supervision; Lance, 2021) will continue unless policymakers ask for change and call for accounts of equitable opportunities to learn in classrooms and schools, not just equitable outcomes.

The Promises and Pitfalls of Implicit Bias Research: Making the Case for Classroom Observation

Recently, the concept of implicit bias has been used as one explanation for the blatant differential treatment that Black, in contrast to white citizens receive from the police (e.g., Nix et al., 2017). In an era that demands social justice, many have concluded that at least some of the school-related opportunity and achievement gaps are due to bias as teachers' implicit biases, which are similar to that of all citizens (Starck et al., 2020), influence teachers' actions toward students and student outcomes (e.g., Carlana, 2019; Chin et al., 2020; Kumar et al., 2015).

We believe that some citizens, including teachers, hold implicit beliefs that serve to reduce the opportunities and productivity of minoritized individuals. Yet, implicit beliefs are exceedingly difficult to measure accurately (Schimmack, 2021) and do not always manifest in behavior. For example, Clayton and colleagues (2020), in a nationally representative sample of white respondents, reported findings that challenged the validity of two popular assessments of implicit bias—the Implicit Association Test (IAT) and the Affect Misattribution Procedure (AMP). They found that many respondents scored by the IAT and the AMP as not being prejudiced *did* endorse explicit and negative stereotypes of Black Americans. Further to the extent that implicit beliefs exist, there is evidence that they are exceedingly difficult to change (Forscher et al., 2019; Lai et al., 2014).

Given that implicit measures have reliability and validity problems it seems that presently it is more profitable to focus on what teachers (or citizens) *do* rather than what they believe. Accordingly, we argue for policy, practice, and research to place more attention on dyadic interactions (how teachers interact with individual students) when assessing equity issues in classroom process.

The Promises and Pitfalls of Whole-Class Observation Instruments: Making the Case for Dyadic Classroom Observation

We do not advocate against whole-class observation systems. These measures can yield useful information about classrooms including why some classrooms have more favorable climates and why students achieve more in some classrooms than they do in others (Hamre & Pianta, 2005;

Rubie-Davies, 2006). We argue that more attention needs to be placed on dyadic interactions especially when the concern is on equity of classroom process.

We focus on the need to supplement what whole-class instruments do not measure well. For example, for some time there have been claims that teachers talk too much (Gitomer et al., 2014; Goodlad, 1984)—nearly 70-80% of the time (Hattie, 2012). Yet, global measures fail to note when students talk, which students get to talk and how their contributions are reacted to by teachers and peers (our review has demonstrated that students are sometimes treated differently in the same classroom).

Whole-class teacher interaction instruments ignore much important information (e.g., participant gender or race, whether participants are excelling or struggling in the subject area). They do not code if teachers engage minoritized and majority students in dialogue, questions, or interactions of similar quality—learning opportunities that often occur with individual students, not the whole class (Lightfoot, 1972; Power, 1971). Whether these distributions, and classroom opportunities more broadly, support equitable opportunities to learn requires more dyadic coding that links student participation and response opportunities to their race, achievement level, and other characteristics. Such data can assess if individual students' classroom experiences impact their end of the year achievement. For many years, policymakers have required that student achievement data be reported in a disaggregated fashion so that the performance of some groups of students was not masked when data are reported as averages. Perhaps it is time to disaggregate classroom *process* data and to report more than how teachers interact with the class as a whole.

Dyadic Observation Instruments: Possibilities for Addressing Classroom Inequalities

We acknowledge that many factors influence the pattern of teachers' interactions with students including students' own initiative, the size of the class, the curriculum, and many other variables. However, the focus of this commentary is limited to thinking about the spread and distribution of students' opportunities to learn as measured by teachers' interactions with individual students or groups of students. We now turn to a discussion of how analysis of teacher interactions with individual students may provide a better understanding of how classroom opportunities are distributed to students based on student-level characteristics such as race, socio-economic status, or prior achievement. Broadly, we describe four advantages of dyadic observation instruments.

One advantage to dyadic observation is that measurement at the level of individual students provides the opportunity to aggregate data at the group and whole class levels to answer questions such as: does membership in two marginalized groups result in significantly reduced opportunities to learn than being in just one? Coding dyadic interactions provides descriptive data on the frequency and quality of opportunities that individual or groups of students receive (e.g., what percentage of the time did multilingual students talk in classrooms relative to monolingual students?). The second advantage of dyadic measures is that it allows for researchers to examine how dyadic instructional patterns accumulate over time (Shah & Lewis, 2019). For example, Carter Andrews et al. (2019) suggested that over time, marginalized students may be less likely to seek help in the classroom. Further, Kelly (2008) found in middle school English classrooms that a student's initial level of achievement was a particularly powerful predictor of reduced engagement and diminished learning opportunities over time. Dyadic coding could build upon this foundational research by expanding to multiple grade levels, content areas, and school settings, as well as classifying students in multiple ways to determine the extent to which diminished opportunity patterns occur or are disrupted, in what context, when, for whom, and how the implications of these patterns may differ as a function

of the outcome measure. A third reason for capturing dyadic interactions is because individual students' participation, such as opportunities to answer questions, to make counter-arguments, can enhance their achievement (Ing et al. 2015; Sedova et al., 2019; Webb et al. 2014). Sedova et al. (2019) directly studied if students who talk more in whole class lessons learn more in ninth-grade language arts lessons. They found that the more students talked and reasoned, the better they performed on a reading literacy test. Finally, a fourth rationale returns to a point we raised at the start of our commentary—the omission of process data as one possible reason for inconsistent findings on the role of schools in reducing gaps, and perhaps some schools are successful at reducing gaps, whereas others are not. Informed by variation in teacher effectiveness and practice (Brophy, 1973; Good & Lavigne, 2015; Kelly, 2008; Mantzicopoulos et al., 2018) and school and teacher effects research (Nye et al., 2004), dyadic data aggregated at the whole class and school level may help illustrate if teachers vary widely in reducing the gaps, not just their overall instruction or effectiveness, as measured by their interactions with students or if the differences largely exist between schools.

Observation Systems

Many analytic observation coding systems and techniques for coding the quality and frequency of teacher interactions with individual students emerged in the 1970s (Alves & Gottlieb, 1986; Brophy & Good, 1970; Casteel, 1998; Weinstein, 1976) and continue to be used today (Kelly, 2008; Kelly et al., 2018; Ortega et al., 2020). This is not a call for the use of any particular system. However, we want to recognize that methodologies already exist for use, modification, or thoughtful replacement to respond to our call for greater attention to the interactions that individual students share with the teacher. Extant systems have the capacity to measure variables such as: level of question, response opportunity, source of talk (who initiated talk), teachers' feedback, turn taking opportunities and types, and more. There are a multitude of classroom interactions that can be captured (e.g., teacher-student, student-student) and multiple ways to measure the dyadic interactions that do occur. We encourage researchers to develop new methods and perhaps leverage old methods with new technologies (see Scott et al., 2011).

Technology Tools

To that end, we believe that equity analytics and the development of tools to capture the distribution of opportunities to learn such as EQUIP (https://www.equip.ninja) offer some promise for answering the questions we mentioned above using equity ratios and have been used to examine how teachers might use such data to address implicit bias (Reinholz et al., 2020). Furthermore, such measures may be positioned well to measure teacher adaptation and change (Kelly et al., 2020). However, fine-grained observation instruments, including dyadic observation instruments, are often expensive and difficult to collect and implement (Kelly et al., 2020). For those reasons, we imagine that numerous tools and applications can be developed to measure and provide feedback on who participates in classrooms and the nature of that participation. Many of these tools leverage low-inference metrics to provide classroom analytics (Reinholz & Shah, 2018). Yet, it is possible to automatically detect and estimate more nuanced instructional practices, like the proportion of authentic questions as exemplified in the work of Kelly et al. (2018). Furthermore, Kelly and colleagues were able to do so with reliability sufficient to complement or even replace human coding. While rapid analytics may not help answer the questions we raise above, they may ease data collection, point to areas worthy of further exploration (e.g., % of group talk time, number of students who participated in class) and provide opportunities for secondary, richer analysis, such is the case with TeachFX (https://teachfx.com) as transcription of classroom recordings is also available. To mitigate the possibility that the forest is missed among the trees and vice versa (Kelly et

al., 2020), these important qualitative and secondary analyses can be coded to talk back to, with, and add meaning to aggregated and disaggregated data. Individual opportunities to learn are not only quantitative, but also qualitative in nature (Brophy & Good, 1970, 1974; Nystrand et al., 1996). Thus, leveraging both qualitative and quantitative analyses of classroom interactions is important for understanding the value of dyadic observation tools as any observation instrument can provide misleading information especially when important qualitative details about students' opportunities to learn are masked (Nystrand et al., 1996). Finally, to assess the effectiveness and impact of dyadic observation, it is imperative to conduct research on how dyadic tools and metrics are implemented and utilized by districts, teachers, and those who supervise teachers with particular attention to high- and low-stakes use.

Conclusion

We have decried the learning gaps between students based on race and income and have recognized that achievement gaps have remained prevalent and unresolved over time. However, we have noted that much of the difference in student achievement in schools can be explained by factors outside of the influence of teachers. The effects of poverty on student achievement are powerful. Recently, teachers' implicit bias has received substantial attention in identifying opportunity gaps that may be related to achievement gaps. This emerging literature along with longstanding research on teacher expectation effects suggests that in some classrooms response and learning opportunities are not equal for all students. This evidence has led us to call for the use of dyadic coding systems to supplement commonly used observation instruments that measure teacher interactions with the whole class. More comprehensive measurement of classroom process has the potential for identifying when inequities in classroom learning opportunities are afforded to students.

Carter et al. (2016) argue, "you can't fix what you don't look at" (p. 207). We also believe this and have argued for prioritizing what teachers *do* in classrooms and supplementing whole-class observation instruments with instruments that describe the opportunities that teachers afford individuals and groups of students. We argued that dyadic instruments may offer better answers and perhaps better solutions if warranted to the question: Do schools provide equitable learning opportunities?

We place our modest proposal in context. More attention to dyadic exchanges and the opportunities that individual students receive is a useful step, but given the magnitude of the problem, other strategies are called for including curriculum modifications, within and outside of school programs, and much more. With these considerations in mind, we believe our call still offers important implications for policy, research, and practice. At the policy level, the Every Student Succeeds Act (ESSA) demonstrated a greater commitment to equity, and all but four states' ESSA plans adopted a stance on equity. However, most state plans describe vague mechanisms for ensuring and measuring equitable opportunities (beyond funding and effective educators) (Chu, 2019). With the support of policymakers, we believe our call for equitable inputs and process, as measured through dyadic observation instruments, would help states make sense of and articulate their progress in ensuring equitable opportunities to learn for all students. For researchers, there are ample opportunities to explore the methodological properties of such instruments, the use of dyadic instruments in practice, and explore ways to ease the burden of such fine-tuned instruments for practitioners while capturing variables that matter the most. For practitioners, utilizing observation instruments that seek to capture equitable opportunities to learn to provide teachers with feedback for their growth and development is one mechanism to enact a commitment to equity in ways that

build upon existing practices and structures in schools—observation and feedback through teacher supervision.

Schools cannot erase all of the inequities imposed by school and residential segregation and poverty, but their classrooms can afford all students the opportunity to ask and answer challenging questions and the dispositions to agree or disagree in reasoned discourse in safe, supportive but academically rigorous settings.

References

Alves, A. J., & Gottlieb, J. (1986). Teacher interactions with mainstreamed handicapped students and their nonhandicapped peers. *Learning Disability Quarterly, 9*(1), 77–83. https://doi.org/10.2307/1510404

Barton, P. E., & Coley, R. J. (2010). *The Black-White achievement gap: When progress stopped* (Policy information report). Educational Testing Service.

Brophy, J. (1973). Stability of teacher effectiveness. *American Educational Research Journal, 10*(3), 245–252. https://doi.org/10.3102/00028312010003245

Brophy, J. E., & Good, T. L. (1970). Teachers' communication of differential expectations for children's classroom performance: Some behavioral data. *Journal of Educational Psychology, 61*(5), 365–374. https://doi.org/10.1037/h0029908

Brophy, J., & Good, T. (1974). *Teacher-student relationships: Causes and consequences*. Holt, Rinehart & Winston.

Bulgren, J. A., & Carta, J. J. (1992). Examining the instructional contexts of students with learning disabilities. *Exceptional Children, 59*(3), 182–191. https://doi.org/10.1177/001440299305900302

Carlana, M. (2019). Implicit stereotypes: Evidence from teachers' gender bias. *The Quarterly Journal of Economics, 134*(3), 1163–1224. https://doi.org/10.1093/qje/qjz008

Carter, P. L., Skiba, R., Arrendondo, M. I., & Pollock, M. (2016). You can't fix what you don't look at: Acknowledge race in addressing discipline disparities. *Urban Education, 52*(2), 207–235. https://doi.org/10.1177/0042085916660350

Carter Andrews, D. J., Brown, T., Castro, E., & Id-Deen, E. (2019). The impossibility of being "perfect and white": Black girls' racialized and gendered schooling experiences. *American Educational Research Journal, 56*(6), 2531–2572. https://doi.org/10.3102/0002831219849392

Casteel, C. A. (1998). Teacher-student interactions and race in integrated classrooms. *The Journal of Educational Research, 92*(2), 115–120. https://doi.org/10.1080/00220679809597583

Chin, M. J., Quinn, D. M., Dhaliwal, T. K., & Lovison, V. S. (2020). Bias in the air: A nationwide exploration of teachers' implicit racial attitudes, aggregate bias, and student outcomes. *Educational Researcher, 49*(8), 566–578. https://doi.org/10.3102/0013189X20937240

Chu, Y. (2019). What are they talking about when they talk about equity? A content analysis of equity principles and provisions in state Every Student Succeeds Act plans. *Education Policy Analysis Archives, 27*(158). https://doi.org/10.14507/epaa.27.4558

Clayton, K., Horrillo, J., & Sniderman, P. M. (2021). The validity of the IAT and the AMP as measures of racial prejudice. *SSRN*. https://doi.org/10.2139/ssrn.3744338

Coleman, J. S., Campbell, E., Hobson, C., McPartland, J., Mood, A., Weinfeld, F., & York, R. (1966). The Coleman report. *Equality of Educational Opportunity*. Superintendent of Documents, U.S. Government Printing Office.

Copur-Gencturk, Y., Cimpian, J. R., Lubienski, S. T., & Thacker, I. (2019). Teachers' bias against the mathematical ability of female, Black, and Hispanic students. *Educational Researcher, 49*(1), 30–43. https://doi.org/10.3102/0013189X19890577

DaSilva Iddings, A. C. (2005). Linguistic access and participation: English language learners in an English-dominant community of practice. *Bilingual Research Journal*, *29*, 165–183. https://doi.org/10.1080/15235882.2005.10162829

De Boer, H., Timmermans, A. C., & van der Werf, M. P. C. (2018). The effects of teacher expectation interventions on teachers' expectations and student achievement: Narrative review and meta-analysis. *Educational Research and Evaluation, 24*(3-5), 180–200. https://doi.org/10.1080/13803611.2018.1550834

Denessen, E., Hornstra, L., van den Bergh, L., & Bijlstra, G. (2020). Implicit measures of teachers' attitudes and stereotypes, and their effects on teacher practice and student outcomes: A review. *Learning and Instruction.* https://doi.org/10.1016/j.learninstruc.2020.101437

Ford, D. Y. (2014). Segregation and the under-representation of Blacks and Hispanics in gifted education: Social inequality and deficit paradigms. *Roeper Review, 36*(3), 143–154. https://doi.org/10.1080/02783193.2014.919563

Forscher, P. S., Lai, C. K., Axt, J. R., Ebersole, C. R., Herman, M., Devine, P. G., & Nosek, B. A. (2019). A meta-analysis of procedures to change implicit measures. *Journal of Personality Social Psychology, 117*(3), 522–559. https://doi.org/10.1037/pspa0000160

Friedman, P. (1976). Comparisons of teacher reinforcement schedules for students with different social class backgrounds. *Journal of Educational Psychology, 68*(3), 286–292. https://doi.org/10.1037/0022-0663.68.3.286

Gansen, H. M. (2018). Push-ups versus clean-up: Preschool teachers' gendered beliefs, expectations for behavior, and disciplinary practices. *Sex Roles, 80,* 393–408. https://doi.org/10.1007/s11199-018-0944-2

Gitomer, D., Bell, C., Qi, Y., McCaffrey, D., Hamre, B. K., & Pianta, R. C. (2014). The instructional challenge in improving teaching quality: Lessons from a classroom observation protocol. *Teachers College Record, 116*, 1–32.

Good, T. L., & Lavigne, A. L. (2015). Issues of teacher performance stability are not new: Limitations and possibilities *Education Policy Analysis Archives*, *23*(2). http://dx.doi.org/10.14507/epaa.v22n95.2014

Good, T. L., Sterzinger, N., & Lavigne, A. L. (2018). Pygmalion 50 years later. *Educational Research and Evaluation*, *24*(3-5), 99–123. https://doi.org/10.1080/13803611.2018.1548817

Goodlad, J. I. (1984). *A place called school: Prospects for the future.* McGraw Hill.

Gopalan, M. (2019). Understanding the linkages between racial/ethnic discipline gaps and racial/ethnic achievement gaps in the United States. *Education Policy Analysis Archives, 27*(154). https://doi.org/10.14507/epaa.27.4469

Grissom, J. A., & Redding, C. (2015). Discretion and disproportionality. *AERA Open, 2*. https://doi.org/10/1177/2332858415622175

Hamre, B. K., & Pianta, R. C. (2005). Can instructional and emotional support in the first-grade classroom make a difference for children at risk of school failure? *Child Development, 76,* 949–967. http://dx.doi.org/10.1111/j.1467-8624.2005.00889.x

Hanushek, E. (2010). *The economic value of higher teacher quality*. Retrieved from https://www.urban.org/sites/default/files/publication/32841/1001507-The-Economic-Value-of-Higher-Teacher-Quality.PDF

Hanushek, E. A., Peterson, P. E., Talpey, L. M., & Woessmann, L. (2019). The achievement gap fails to close: Half-century of testing shows persistent divide between haves and have-nots.

Education Next. Retrieved from http://hanushek.stanford.edu/publications/achievement-gap-fails-close-half-century-testing-shows-persistent-divide-between-haves

Hashim, S. A., Kane, T. J., Kelly-Kemple, T., Laski, M. E., & Staiger, D. O. (2020, August). *Have income-based achievement gaps widened or narrowed?* National Bureau of Economic Research. https://doi.org/10.3386/w27714

Hattie, J. (2012). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.

Hoehn, A. J. (1954). A study of social status differentiation in the classroom behavior of nineteen third grade teachers. *Journal of Social Psychology, 39,* 269–29. https://doi.org/10.1080/00224545.1954.9919123

Ing, M., Webb, N. M., Franke, M. I., Turrou, A. C., Wong, J., Shin, N., & Fernandez, C. H. (2015). Student participation in elementary mathematics classrooms: The missing link between teacher practices and student achievement? *Educational Studies in Mathematics, 90,* 341–356. https://doi.org/10.1007/s10649-015-9625-z

Irvine, J. (1985). Teacher communication patterns as related to the race and sex of the student. *The Journal of Educational Research, 78*(6), 338–345. https://doi.org/10.1080/00220671.1985.10885627

Johnson, O., Wildy, H., & Shand, J. (2019). A decade of teacher expectations research 2008–2018: Historical foundations, new developments, and future pathways. *Australian Journal of Education, 63*(1), 44–73. https://doi.org/10.1177/0004944118824420

Katz, I. (1970). Experimental studies of negro-white relationships. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 5). Academic Press.

Kelly, S. (2008). Race, social class, and student engagement in middle school English classrooms. *Social Science Research, 37,* 434–448. https://doi.org/10.1016/j.ssresearch.2007.08.003

Kelly, S., Bringe, R., Aucejo, E., & Fruehwirth, J. (2020). Using global observation protocols to inform research on teaching effectiveness and school improvement: Strengths and emerging limitations. *Education Policy Analysis Archives, 28*(62). https://doi.org/10.14507/epaa.28.5012

Kelly, S., Olney, A. M., Donnelly, P., Nystrand, M., & D'Mello, S. K. (2018). Automatically measuring question authenticity in real-world classrooms. *Educational Researcher, 47*(7), 451–464. https://doi.org/10.3102/0013189X18785613

Kim, J., & Sun, M. (2020). The implementation and potential effects of teacher evaluation under local control. *School Effectiveness and School Improvement*. https://doi.org/10.1080/09243453.2020.1841657

Kleinfeld, J. (1975). Effective teachers of Eskimo and Indian students. *School Review, 83,* 301–344. https://doi.org/10.1086/443191

Kolluri, S. (2018). Advanced placement: The dual challenge of equal access and effectiveness. *Review of Educational Research, 88*(5), 671–711. https://doi.org/10.3102/0034654318787268

Kounin, J. S. (1970). *Discipline and group management in classrooms*. Holt, Reinhardt and Winston.

Kuhfeld, M., Condron, D. J., Downey, D. B. (2021). When does inequality grow? A seasonal analysis of racial/ethnic disparities in learning from Kindergarten through eighth grade. *Educational Researcher, 50*(4), 225–238. https://doi.org/10.3102/0013189X20977854

Kuhfeld, M., Soland, J., Tarasawa, B., Johnson, A., Ruzek, E., & Liu, J. (2020). Projecting the potential impact of COVID-19 school closures on academic achievement. *Educational Researcher, 49*(8), 549–565. https://doi.org/10.3102/0013189X20965918

Kumar, R., Karabenick, S. A., & Burgoon, J. N. (2015). Teachers' implicit attitudes, explicit beliefs, and the mediating role of respect and cultural responsibility on mastery and performance-focused instructional practices. *Journal of Educational Psychology, 107*(2), 533–545. https://doi.org/10.1037/a0037471

Lai, C. K., Marini, M., Lehr, S. A., Cerruti, C., Shin, J.-E. L., Joy-Gaba, J. A., Ho, A. K., Teachman, B. A., Wojcik, S. P., Koleva, S. P., Frazier, R. S., Heiphetz, L., Chen, E. E., Turner, R. N., Haidt, J., Kesebir, S., Hawkins, C. B., Schaefer, H. S., Rubichi, S., . . . Nosek, B. A. (2014). Reducing implicit racial preferences: I. A comparative investigation of 17 interventions. *Journal of Experimental Psychology: General, 143*(4), 1765–1785. https://doi.org/10.1037/a0036260

Lance, T. (2021). Chasing down the educational debt by centering race in educational supervision. *Journal of Educational Supervision, 4*(1). https://doi.org/10.31045/jes.4.1.2

Laosa, L. M. (1977). Inequality in the classroom: Observational research on teacher-student interactions. *International Journal of Chicano Studies Research, 8,* 51–67.

Lightfoot, S. (1972). *An ethnographic study of the status structure of the classroom.* Unpublished doctoral dissertation, Harvard University.

McKinsey & Company. (2020, June 1). *COVID-19 and student learning in the United States: The hurt that could last a lifetime.* Retrieved from https://www.mckinsey.com/industries/public-and-social-sector/our-insights/covid-19-and-student-learning-in-the-united-states-the-hurt-could-last-a-lifetime

Mantzicopoulos, P., French, B. F., Patrick, H., Watson, J. S., & Ahn, I. (2018). The stability of kindergarten teachers' effectiveness: A generalizability study comparing the Framework for Teaching and the Classroom Assessment Scoring System. *Educational Assessment, 23,* 24–46. https://doi.org/10.1080/10627197.2017.1408407

Mohr, K.J., & Mohr, E. S. (2007). Extending English-Language Learners' classroom interactions using the Response Protocol. *The Reading Teacher, 60*(5), 440–450. https://doi.org/10.1598/RT.60.5.4

Morgan, P. L., Farkas, G., Hillemeier, M. M., & Maczuga, S. (2016). Science achievement gaps begin very early, persist, and are largely explained by modifiable factors. *Educational Researcher, 45*(1), 18–35. https://doi.org/10.3102/0013189X16633182

Morris, E. W., & Perry, B. L. (2017). Girls behaving badly? Race, gender, and subjective evaluation in the discipline of African American girls. *Sociology of Education, 90*(2), 127–148. https://doi.org/10.1177/0038040717694876

Morton, K., & Riegle-Crumb, C. (2020). Is school racial/ethnic composition associated with content coverage in algebra? *Educational Researcher, 49*(6), 441–447. https://doi.org/10.3102/0013189X20931123

Nix, J., Campbell, B. A., Byers, E. H., & Alpert, G. P. (2017). A bird's eye view of civilians killed by police in 2015: Further evidence of implicit bias. *Criminology & Public Policy, 16*(1), 309–340. https://doi.org/10.1111/1745-9133.12269

Nye, B., Konstantopoulos, S., & Hedges, L. V. (2004). How large are teacher effects? *Educational Evaluation and Policy Analysis, 26*(3), 237–257. https://doi.org/10.3102/01623737026003237

Nystrand, M., Gamoran, A., Kachur, R., & Prendergast, C. (1996). *Opening dialogue*. Teachers College Press.

Ortega, L., Boda, Z., Treviño, E., Arriagada, V., Gelber, D., & Escribano, M. D. (2020). The centrality of immigrant students within a teacher-student interaction networks: A relational approach to educational inclusion. *Teaching and Teacher Education, 95*, 103–126. https://doi.org/10.1016/j.tate.2020.103126

Pearman, F. A., Curran, F. C., Fisher, B., & Gardella, J. (2019). Are achievement gaps related to discipline gaps? Evidence from national data. *AERA Open, 5*. https://doi.org/10.1177/2332858419875440

Pit-ten, I. M., & Glock, S. (2018). Teacher expectations concerning students with immigrant backgrounds or special educational needs. *Educational Research and Evaluation, 24*(3-5), 277–294. https://doi.org/10.1080/13803611.2018.1550839

Power, C. (1971). *The effects of communication patterns on student socio-economic status, attitudes and achievement in science*. Unpublished doctoral dissertation, University of Queensland.

Quinn, D. M. (2017). Racial attitudes of preK-12 and postsecondary educators: Descriptive evidence from nationally representative data. *Educational Researcher, 46,* 397–411. https://doi.org/10.3102/0013189X17727270

Quinn, D. M., Cooc, N., McIntyre, J., & Gomez, C. J. (2016). Seasonal dynamics of academic achievement inequality by socio- economic status and race/ethnicity: Updating and extending past research with new national data. *Educational Researcher*, *45*(8), 443–453. https://doi.org/10.3102/0013189X16677965

Reardon, S. F. (2011). The widening socioeconomic status achievement gap: New evidence and possible explanations. In R. J. Murnane & G. J. Duncan (Eds.), *Whither opportunity? Rising inequality and the uncertain life chances of low-income children*. Sage.

Reardon, S. F. (2020). *The economic achievement gap in the U.S., 1960–2020: Reconciling recent empirical findings*. Preliminary report.

Reinholz, D. L., & Shah, N. (2018). Equity analytics: A methodological approach for quantifying participation patterns in mathematics classroom discourse. *Journal for Research in Mathematics Education, 49*(2), 140–177. https://doi.org/10.5951/jresematheduc.49.2.0140

Reinholz, D. L., Stone-Johnstone, A., & Shah, N. (2020). Walking the walk: Using classroom analytics to support instructors to address implicit bias in teaching. *International Journal for Academic Development, 25*(3), 259–272. https://doi.org/10.1080/1360144X.2019.1692211

Rjosk, C., Richter, D., Hochweber, J., Lüdtke, O., Klieme, E., & Stanat, P. (2014). Socioeconomic and language minority classroom composition and individual reading achievement: The mediating role of instructional quality. *Learning & Instruction, 32,* 63–72. https://doi.org/10.1016/j.learninstruc.2014.01.007

Rubie-Davies, C. (2006). Teacher expectations and student self-perceptions: Exploring relationships. *Psychology in the Schools, 43*(5), 537–552. https://doi.org/10.1002/pits.20169

Rubie-Davies, C. (2014). *Becoming a high expectation teacher: Raising the bar*. Routledge.

Rubie-Davies, C., & Rosenthal, R. (2016). Intervening in teachers' expectations: A random effects meta-analytic approach to examining the effectiveness of an intervention. Learning and Individual Differences, 50, 83–92. https://doi.org/10.1016/j.lindif.2016.07.014

Santiago-Rosario, M. R., Whitcomb, S. A., Pearlman, J., & McIntosh, K. (2021). Associations between teacher expectations and racial disproportionality in discipline referrals. *Journal of School Psychology, 85,* 80–93. https://doi.org/10.1016/j.jsp.2021.02.004

Schimmack, U. (2021). The implicit association test: A method in search of a construct. *Perspectives in Psychological Science, 16*(2), 396–414. https://doi.org/10.1177/1745691619863798

Scott, T. M., Alter, P. J., & Hirn, R. G. (2011). An examination of typical classroom context and instruction for students with and without behavioral disorders. *Education and Treatment of Children, 34*(4), 619–614. https://doi.org/10.1353/etc.2011.0039

Scott, T. M., Gage, N., Hirn, R., & Han H. (2019). Teacher and student race as a predictor for negative feedback during instruction. *School Psychology Quarterly, 34(*1), 22–31. https://doi.org/10.1037/spq0000251

Shah, N., & Lewis, C. M. (2019). Amplifying and attenuating inequity in collaborative learning: Toward an analytical framework. *Cognition and Instruction, 37*(2), 1–30. https://doi.org/10.1080/07370008.2019.1631825

Sedova, K., Sedlacek, M., Svaricek, R., Majcik, M., Navratilova, J., Drexlerova, A., Kychler, J., & Salamounova, Z. (2019). Do those who talk more learn more? The relationship between student classroom talk and student achievement. *Learning and Instruction, 63,* 101–217. https://doi.org/10.1016/j.learninstruc.2019.101217

Skiba, R. J., Horner, R. H., Chung, C. G., Karega Rausch, M., May, S. L., & Tobin, T. (2011). Race is not neutral: A national investigation of African American and Latino disproportionality in school discipline. *School Psychology Review, 40*(1), 85. https://doi.org/10.1080/02796015.2011.12087730

Slavin, R., & Inns, A. (2021). Eliminating achievement gaps with cost-effective and other proven strategies. In Fisher, D. (Ed.), *Routledge encyclopedia of education.* Routledge.

Stanford Center for Education Policy Analysis (n.d.). Racial and ethnic achievement gaps. Retrieved from https://cepa.stanford.edu/educational-opportunity-monitoring-project/achievement-gaps/race/

Starck, J. G., Riddle, T., Sinclair, S., & Warikoo, N. (2020). Teachers are people too: Examining racial bias of teachers compared to other American adults. *Educational Researcher, 49*(4), 273–284. https://doi.org/10.3102/0013189X20912758

Stipek, D. (2004). Teaching practices in kindergarten and first grade: Different strokes for different folks. *Early Childhood Research Quarterly, 19*(4), 548–568. https://doi.org/10.1016/j.ecresq.2004.10.010

Sullivan, B., Hegde, A. V., Ballard, S. M., & Ticknor, A. S. (2015). Interactions and relationships between kindergarten teachers and English language learners. *Early Child Development and Care*, *185*, 341–359. https://doi.org/10.1080/03004430.2014.919496

Van den Bergh, L., Denessen, E., Hornstra, L., Voeten, M., & Holland, R. W. (2010). The implicit prejudiced attitudes of teachers. *American Educational Research Journal*, *47*(2), 497–527. https://doi.org/10.3102/0002831209353594

Von Hippel, P. T., Workman, J., & Downey, D. B. (2018). Inequality in reading and math skills forms mainly before kindergarten: A replication, and partial correction, of "Are Schools the Great Equalizer?" *Sociology of Education*, *91*, 323–357. https://doi.org/10.1177/0038040718801760

Wang, S., Rubie-Davies, C. M., & Meissel, K. (2018). A systematic review of the teacher expectation literature over the past 30 years. *Educational Research and Evaluation, 24*(3-5), 124–179. https://doi.org/10.1080/13803611.2018.1548798

Webb, N. M., Franke, M. L., Ing, M., Wong, J., Fernandez, C. H., Shin, N., & Turner, A. C. (2014). Engaging with others' mathematical ideas: Interrelationships among student participation, teachers; instructional practices, and learning. *International Journal of Educational Research, 63*, 79–93. https://doi.org/10.1016/j.ijer.2013.02.001

Weinstein, R. S. (1976). Reading group membership in first grade: Teacher behaviors and pupil experience over time. *Journal of Educational Psychology, 68*(1), 103–116. https://doi.org/10.1037/0022-0663.68.1.103

Weinstein, R. S. (2002). *Reaching higher: the power of expectations in schooling*. Harvard University Press.

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