Disproportionalities in Gifted and Talented Education Enrollment Rates: An Analysis of the U.S Civil Rights Data Collection Series

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Abstract

Particular racial/ethnic and class groups remain underrepresented within gifted and talented education (GATE). However, students who are culturally and linguistically diverse (CLD) or gifted and disabled are also underrepresented but are often excluded from analysis. A cross-sectional design was to evaluate gifted enrollment data gathered by the Office for Civil Rights (OCR), using the Civil Rights Data Collection Series (CRDC). Proportional representation in GATE enrollment assessed students' race/ethnicity, English Language Learner (ELL) status, and disability status under the Individuals with Disabilities Education Act (IDEA). A one-sample z test of proportions rendered statistically significant disproportionality across all groups evaluated. Results indicate the issue driving disproportionality lies within the theory of intelligence used to measure giftedness in Western school systems and calls for correctly diagnosing the GATE systems' underlying inequities.

Keywords: GATE, disproportionality, fluid intelligence, twice-exceptional, ELL, CLD

Introduction

Charles is a homeless Black male with autism—but he is also a homeless Black male with autism who is *gifted*. Students like Charles are statistically less likely to be identified for gifted education; those who are diverse in terms of race, ability, and class also have decreased access to and participate less in gifted programs in the United States (Ford & Grantham, 2003; Ford, Grantham, & Whiting, 2008). Throughout much of American history, underrepresented groups have seen their abilities go un- or under-recognized (Card & Giuliano, 2016; Morris, 2001).

Data demonstrate longstanding and consistent underrepresentation of certain racial and socioeconomic groups within gifted programs (Callahan, 2005; Ford et al., 2008; Yaluma & Tyner, 2018). Yet, even as data from the federal government bear out this lack of proportion, only 2% of academic studies pertaining to gifted education have focused on culturally and linguistically diverse (CLD) students (Elhoweris, Mutua, Alsheikh, & Holloway, 2005). While the literature regarding students who are low SES and gifted is well-established, research pertaining to these variables (i.e. CLD and socioeconomic status) most often report their data using descriptive rather than inferential statistics, leaving the field of gifted education unexplored in this way.

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A review of GATE literature resulted in six key themes: (1) racial/ethnic differences, (2) CLD, (3) low SES, (4) twice-exceptionality, (5) identification methods, and (6) retention. The research questions guiding this study will follow this review.

Enrollment disproportionalities exist across students' racial backgrounds. Callahan (2005) reported that Black and Hispanic students were less than half as likely to take part in gifted programs; so, too, were Native Alaskan and American Indian students profoundly underrepresented. Students who are Black, Hispanic, and American Indian have, in fact, been annually underrepresented in gifted education programs by at least 40% (Ford et al., 2008). Results from a recent meta-analysis of gifted studies, from 2002 to 2015, showed that Black, Hispanic, and American Indian students were about one third as likely to be identified for gifted education as were their White and Asian counterparts (Hodges, Tay, Maeda, & Gentry, 2018). Grissom and Redding (2015) found that, for example, when compared to their White peers, Black students were 66% less likely to be identified for gifted programs. Yaluma and Tyner (2018) offered more in this regard, finding that, among schools with gifted programs around the nation, Black students were 15% of the total student population but only 10% of the enrolled gifted population. Meanwhile, Hispanic students were 27.6% of the total student population but only 20.8% of the enrolled gifted population.

Disproportionality rates for CLD students mirror those for students of color. Designated as ELLs by the U.S. Department of Education, CLD students can be distinguished by racial/ethnic minorities, language, and social class standing when compared to mainstream culture (Terry & Irving, 2010). Students who are ELLs typically have not participated in gifted education. The ORC (2014) reported an overall gifted enrollment of 2.8% for

ELLs in the United States. The 2014–2015 *State of the States in Gifted Education* report listed 12 states that counted ELL gifted populations of 1% or under (NAGC, 2015), with Colorado reporting the highest rate, at 4.5% (NAGC). These data underscore the disproportionality in participation rates across groups, with scholars attending to larger demographic subgroups. Still, the literature on ELLs is rather limited.

Similar to race/ethnicity and CLD status, students living in poverty are underrepresented in gifted programs. This disproportionality exists even though, as Suitts (2015) found, low-income families constituted 51% of the student population. The 2014–2015 *State of the States in Gifted Education* report showed that rates of gifted enrollment for low SES students ranged from 1% to 38.9% across the 14 states that provided data (NAGC, 2015). Finally, Callahan (2005) noted that the National Education Longitudinal Study (NELS) pointed to only 9% of all gifted students coming from low-income families.

Another area of disproportionality appears with students deemed *twice-exceptional*, or those who are gifted but who also have a disability. Twice-exceptional students can be identified in federal data sets under the IDEA designation, and they are rarely present in gifted programs. The 2013–2014 CRDC results indicated that students qualified under IDEA amounted to only 2.4% of gifted program enrollment in the United States (OCR, 2014). According to the 2014–2015 *State of the States in Gifted Education* report, rates for twice-exceptional students ranged from .1% to 6% across the 15 states reporting data (NAGC, 2015). In a study examining twice-exceptionality in students living in Mississippi, those with speech and language delays—but who were still deemed gifted—made up only 1.5% of the identified gifted population (Karnes & Bisland, 2004). This percentage was the largest of those considered twice-exceptional; those who were learning disabled

and identified as gifted were the second largest group, registering at .5% (Karnes & Bisland).

Processes that lead to the identification of candidates for GATE programming have been noted as one key cause for such disproportionality rates (Maddocks, 2018). Grissom and Redding (2015) showed that identification methods have little to do with a student's intellectual ability—and, even more, that the classroom teacher's alignment or misalignment of race played a key role affecting student identification in the case of teacher referrals. A nonverbal screening option is the Cognitive Abilities Test (CogAT). The most recent literature examining the relationship between underrepresented populations and the CogAT found that group differences were not eliminated by using a universal screener such as the CogAT (Carman, Walther, & Bartsch, 2018). Universal screeners are strongly encouraged, because all students are tested within a chosen grade level (Card & Giuliano, 2016; Yaluma & Tyner, 2018), therefore, in theory, increasing opportunity. Still, this method can also lead to disproportionalities (Carman et al.).

As challenging as recruitment is for underrepresented populations, professionals also struggle to retain students who end up enrolling in gifted programs. Data tracking student retention is not readily available (Ford, 1998; Ford et al., 2008); national retention rates are difficult to determine because available data track only enrollment rather than gifted program completion (Ford; Ford et al.). Especially in the case of CLD students, retention could be affected by recruitment—which is to say, CLD students might be concerned about fitting in and experiencing camaraderie with White peers and teachers, perhaps making the students less inclined to participate.

Given the aforementioned, two research questions were promulgated to guide the present study. The first question was: In terms of GATE

program enrollment, do disproportionalities exist in student populations according to race/ethnicity, IDEA status, and ELL status? And the second question was: When considering GATE program enrollment, what is the ranking of U.S. states in terms of their disproportionalities with respect to race/ethnicity?

Method

Design

This study employed a cross-sectional observational design using archival (i.e., pre-existing) data (Mann, 2003). The examination of gifted program enrollment attended to variables of race/ethnicity (binominal), disability status (binomial), and ELL status (binomial). Power analyses were not conducted, because the data contained the entire population.

Participants

Data were obtained from a publicly shared file within the 2015–2016 CRDC series. All participants were public school students within the United States.

Measures

GATE enrollment status. Program enrollment was dummy coded as 0 for *No* and 1 for *Yes*.

Disability status. Students designated with a disability under IDEA were coded as 0 for *does not have a disability* and 1 for *has a disability*.

Race/ethnicity status. Race was divided into two groups, with 0 representing *historically underrepresented* (i.e., Black, Hispanic, Indigenous, multi-racial, Pacific Islander) and 1 standing for *historically overrepresented* (i.e., Asian and White).

ELL status. English Language Learners were coded as 0 for *no ELL status* and 1 for *ELL status*.

Total population disabilities proportion (p_0). This is the proportion of students among the national population who are disabled.

Sample GATE disabilities proportion ($\hat{p}$). This is the proportion of students who were both enrolled in GATE and disabled. The sample proportion was drawn from this group.

Total population race/ethnicity proportion (p_0). This is the proportion of students among the national population by race/ethnicity.

Sample GATE race/ethnicity proportions ($\hat{p}$). This is the proportion of students, by race/ethnicity, who enrolled in GATE. The sample proportion was drawn from students within over- and underrepresented racial groups who enrolled in GATE programs.

Total population ELL status proportion (p_0). This is the proportion of students among the national population who are ELL status.

Sample GATE ELL status proportion ($\hat{p}$). This is the proportion of students who enrolled in GATE and who are ELL status. The sample proportion was drawn from students who both enrolled in GATE programs and were ELL status.

Data Analysis

The first research question measured proportional differences between GATE students and the entire student population. All three demographic variables were binomial. A one-sample z test of proportions allows researchers to analyze

an observed binomial variable (i.e., $\hat{p}$) against a known population proportion (i.e., p_0) (Daly & Bourke, 2008). The significance level for all analyses, including inferential ones, was set at .05. The second research question relied on the Rae Index to quantify the size of each state's racial disproportionality, producing an index value. Descriptive statistics were then used to rank-order individual state racial disproportionality index values. Both research questions were computed using the statistical programming language, R, for their analyses.

Results

A one-sample z test of proportions demonstrated proportional differences with respect to the first research question, rendering statistically significant results in terms of race/ethnicity, language status, and disability status. In the case of race/ethnicity, the results for historically underrepresented racial groups were: $p_0 = .47$, $\hat{p} = .31$, $n = 1,034,427$, $p = < .05$., while the results for ELL status were: $p_0 = .10$, $\hat{p} = .02$, $n = 90,998$, $p = < .05$. Finally, the results for IDEA designation were: $p_0 = .12$, $\hat{p} = .02$, $n = 88,063$, and $p = < .05$.

The second research question relied on the Rae Index to quantify the size of the racial disproportionality within each state by measuring the absolute deviation between expected and observed proportions. Rae Index scores closer to 0 have smaller differences between expected and observed proportions, and scores closer to 1 have larger differences. Index scores among states were then ranked from smallest to largest—that is, from least disproportionate to most disproportionate. See Table 1 for individual state rankings.

Discussion

In terms of race/ethnicity, there are three possible explanations for the above results. First, states and school districts lack consistent policies for identifying students for gifted programs

(NAGC, 2015). Second, racial disproportionalities in these data could be a function of cultural bias in the measures adopted to identify gifted status. While certain nonverbal measures, such as the Raven Standard Progressive Matrices (RAVEN, 1941), the NNAT, and the CogAT, have been shown to reduce racial differences in gifted identification, entirely culture-neutral tests do not exist (Sternberg, 2018). Third, it could be that giftedness, which is based on fluid intelligence (i.e., *Gf*), is culture-bound.

While these arguments are all plausible, the third explanation is the most logical because a culture-bound theory of intelligence influences societal conceptions of giftedness and shapes related programming. Although there are various types of intelligence, *Gf* is the one mostly commonly used to identify giftedness in children (McBee, Peters, & Miller, 2016). In essence, *Gf* is the ability to solve problems; however, learning how to solve problems, as well as understanding which problems are worth solving, are skills defined differently across cultures (Cocodia, 2014; Sternberg, 2018).

The upshot here is that, despite profound differences in cultural and racial backgrounds, children living in the United States are screened for giftedness based on how well they have adapted to Western culture and by the degree to which their achievements are consistent with Western values. The race/ethnicity and ELL variables show an unavoidable explanatory overlap in terms of their results. While both variables have unique characteristics, we cannot deny the depth and strength of the shared cultural component that sets these groups apart from mainstream Western culture.

These designations invite us to consider three shared explanations as well as two additional explanations not yet considered. The first shared explanation addresses inconsistencies in identification measures existing across states and

school districts (NAGC, 2015). The second shared explanation posits that gifted identification measures contain cultural bias privileging mainstream Western culture (Cocodia, 2014; Ford et al., 2008; Naglieri & Ford, 2003; Sternberg, 2018). Selected nonverbal batteries putatively assess the potential giftedness of ELL students, but Lohman, Korb, and Lakin (2012) found that the three most common instruments (CogAT, NNAT, and RAVEN) insufficiently assessed ELL students. Significantly then, inadequate attention discourages the adoption of nonverbal measures as best practices in gifted assessments for students who are linguistically diverse. A third and final shared argument targets the culture-bound theory of intelligence in which gifted identification is rooted (Cocodia; Sternberg).

Of the two explanations not yet considered, the first pertains to the administration of assessments. Assessing student performance by snapshot testing, where a test is administered only once, fails to address the needs of ELL students (National Council of Teachers of English, 2008), especially considering the level of familiarity that speakers of limited English have with standardized testing (Sternberg, 2018). The second explanation not yet considered focuses on an ELL student's experience with culture shock. The complicated relationship of external factors igniting culture shock can mask academic abilities, often resulting in the overrepresentation of ELL students in Special Education programs (Brown, 2004). As such, culture shock could also be responsible for the underrepresentation of ELL students in gifted programming.

The most logical explanation is, again, a culture-bound theory of intelligence. Intelligence is a measure of adaptability, although acquiring adaptive skills is specific to the context of our environment (Sternberg, 2018). While the form of intelligence used to measure giftedness in Western culture (i.e., *Gf*) is a measure of adaptability, conventional cognitive testing does not identify

skills that ELL students have acquired in their countries of origin (Sternberg). Arguments that target testing and assessment are, therefore, somewhat misplaced; looking at the results and consequences more critically indicates the problem is culture-bound.

In terms of IDEA designation, four possible explanations warrant consideration. The first argument states that stereotypes of giftedness have diminished opportunity within our educational system. Research encouraging a more complex and dynamic conception of giftedness is prevalent, but a combination of teacher training that is insufficiently attentive to diverse learners and the lasting influences of Terman's (1925) studies encourages educators to conceive of gifted students as needing to excel in *all* academic areas and as demonstrating great social and moral development (Bianco & Leech, 2010). The second argument involves perceptions that special education teachers have toward ability. Special education training calls for identifying deficits and employing intervention; thus, teachers view the ability of a student with an IDEA designation through a lens of remediation rather than through a lens of potentiality—potentiality that could, instead, emphasize the student's strengths (Bianco & Leech; Pfeiffer, 2009). Not surprisingly, given this tendency, Bianco and Leech showed that special education teachers have the lowest referral rates to gifted education programs.

The third argument suggests that the masking effect limits opportunity for students who are disabled and gifted (Bianco & Leech, 2010; Maddocks, 2018; Pfeiffer, 2009; Silverman, 2009). Students who are twice-exceptional, in terms of giftedness and disability, are additionally challenged because the interaction of the students' two spheres of exceptionality can complicate their performance in testing, making them appear to be average (Bianco & Leech; Maddocks). The fourth explanation states that no clear process exists to identify, as gifted, students with a disability

(Lovett & Sparks, 2013; Maddocks). Scholars and practitioners differ over the classification of twice-exceptionality (Lovett & Sparks; Maddocks), and this lack of consensus has resulted in inconsistent selection and administration of gifted measures used for identification, while also contributing to concerns over validity (Lovett & Sparks).

Among these possibilities, the most logical is the fourth explanation, pointing to the lack of a clear process for identifying twice-exceptionality. By nature, a process describes how something is done, while striving to make tasks more efficient, especially in situations involving large volumes. Any means by which a school district goes about identifying giftedness in students is a process; therefore, if identification processes differ across districts and states, they tend to become counter-productive, especially for student groups who are vulnerable populations and who exist in small percentages in gifted programs. Due to the inconsistent operationalization carried out by scholars, research has failed to generate valid forms of measurement and criteria for identifying twice-exceptional students. Without a clear recognition process and designated best practices, identification rates for this group will remain disproportionate.

In terms of the second research question, the Rae Index quantified the size of racial disproportionality existing within states. The scores were then rank-ordered from smallest to largest disproportionality, nationwide on a 0–1 scale. Variability among index scores can be explained by considering the population proportion by race present in individual states. For example, the two states with the highest scores had a higher p_0 value (i.e., proportion of students expected to enroll) based on higher racial proportions of students in the total populations within their states. Yet the $\hat{p}$ value (i.e., proportion of students who actually enrolled) resulted in half of the expected proportion, creating a larger disproportionality size. Therefore, variability in racial disproportionality

sizes among state rankings are driven by the size of the expected population proportion.

This study contains two limitations of note. First, not every state made its identification procedures available. While an analysis of relationships among identification procedures and disproportionality was not the purpose of this study, having identification measures employed by each state could inform future research on enrollment-related equity gaps. Second, caution is necessary when interpreting the IDEA results, as specific disabilities associated with giftedness were not available. It is important to note, too, that while there are currently 13 disability categories under IDEA, the literature on twice-exceptionality typically focuses only on the three most often associated with giftedness: specific learning disabilities, autism, and other health impairments (Pereira, Knotts, & Roberts, 2015). Due to data restrictions, inferences extend only as far as the direct finding of underrepresentation, in gifted education, of students who are twice-exceptional.

While most work in the field points to assessments and identification processes as the causes of disproportionality, the present study offers something different. Scholars and social justice advocates in gifted education have charged that deficit thinking operates as a gatekeeper for gifted programs, but this research finds the roots of the problem reach much deeper than previously realized, demanding a response that goes beyond simply multicultural training and continuing education. Deficit thinking is grounded in historical misperceptions of and errant beliefs about race, but this study posits that deficit thinking actually transcends race—suggesting that such bias can also affect CLD students. Future research should, therefore, focus on the culture-bound nature of the theory of intelligence (i.e., fluid intelligence) on which gifted education is based. A mixed-method study surveying the prevalence of this theory of intelligence and its influence on curriculum in training programs, as well as a qualitative analysis

of the leadership in such programs, would, for example, better reveal how, when, and why constructions of “giftedness” emerged and, even more, how they have been maintained. Thereby showing that a continuation of current gifted practices is, indeed, putting the word “GATE” in gatekeeping.

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Table 1
Racial Disproportionality in Gifted Enrollment by State

State	Rae Index Score (0-1)
New Hampshire	0.0132
Rhode Island	0.0151
West Virginia	0.0176
Maine	0.0241
Massachusetts	0.0329
Montana	0.0454
Utah	0.0475
North Dakota	0.0575
Wyoming	0.0757
Michigan	0.0764
Arkansas	0.081
Kentucky	0.082
New York	0.0831
Minnesota	0.0896
Iowa	0.0902
Missouri	0.0913
Wisconsin	0.0929
Pennsylvania	0.0939
Indiana	0.1052
Illinois	0.1062
Oklahoma	0.1111
Idaho	0.1121
Ohio	0.1155
Alaska	0.1167
New Jersey	0.1204
Kansas	0.121
Oregon	0.1296
Nebraska	0.1313
Tennessee	0.1372
Connecticut	0.1431
Hawaii	0.1529
Colorado	0.1543
Virginia	0.1554

Maryland	0.1564
Washington	0.1567
Florida	0.1569
Texas	0.1601
California	0.1628
South Dakota	0.1671
Louisiana	0.1699
Nevada	0.177
Alabama	0.1917
Arizona	0.1964
South Carolina	0.2022
Mississippi	0.2065
New Mexico	0.2069
Delaware	0.2079
Georgia	0.2459
North Carolina	0.2516