The CASA Criteria for Evaluating Gifted and Talented Identification Systems: Cost, Alignment, Sensitivity, and Access

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Scott J. Peters[1], Tamra Stambaugh[2], Matthew C. Makel[3], Lindsay Ellis Lee[4], Matthew T. McBee[5], D. Betsy McCoach[6], and Kiana R. Johnson[4]

Abstract
Debates over identification procedures for gifted and talented students dominate the field and serve as the topic of many of its internal and external debates. We believe this is due to a lack of commonly accepted criteria for how to evaluate identification procedures. In this article, we present the Cost, Alignment, Sensitivity, and Access (CASA) criteria, a framework to evaluate identification systems according to their cost, alignment to services, sensitivity, and access. We believe these criteria would facilitate more productive conversations over identification and continued growth and improvement for the field as a whole.

Keywords
identification, equity, cost, alignment

Debates abound regarding the definition and conception of giftedness, including entire books (Cross & Olszewski-Kubilius, 2020; Dai & Chen, 2014) and special issues from journals devoted to the topic (e.g., *Gifted Child Quarterly*, *Gifted and Talented International*). Undoubtedly, the field has progressed toward greater understanding of varying paradigmatic perspectives of giftedness (see Worrell et al., 2019, for an overview). What has made less progress—likely due to these varying perspectives—is the processes through which students are identified for gifted and talented services in K–12 schools. Typically, in the United States, identification is a two-phase process that includes a referral or screening phase (Phase 1) and a formal evaluation phase (Phase 2). However, inconsistencies in the process can lead to lack of access (Lee & Peters, 2022; McBee et al., 2014). Nowhere is this more evident than in the field's inability to identify more proportional numbers of students who are Black, Latinx, Native American, from low-income families, still learning English, or are twice-exceptional. Disproportional representation in gifted education remains the norm for students who are Black, Latinx, and Native American (2016 Representation Indices [RIs] of 0.57, 0.70, and 0.87, respectively) and those who are White and Asian American (RIs of 1.18 and 2.01, respectively). These RI values mean that Black and White students were represented at rates of 57% and 118% compared with their representation in the overall student population. Similarly, students classified as Limited English Proficient or who received services under the Individuals with Disabilities Education Act (IDEA) are also disproportionately represented (0.27 and 0.21, respectively; Peters et al., 2019).

Identification is one of the most debated and controversial aspects of gifted and talented education (Dai & Chen, 2014; Peters, 2021). We suggest that much of the controversy and confusion surrounding identification stems from the field's lack of a common set of criteria for what constitutes a "good" or "appropriate" student identification system, *regardless of the operating definition of giftedness one uses*. Discussions and debates over the most appropriate identification criteria cannot be productive absent an agreed-upon set of evaluation criteria for what the field expects an identification system to do. There needs to be agreement in the field on what success looks like before we can assess how successful (or not) identification systems really are.

Thus far, in the absence of agreement among researchers and practitioners, the default criterion has been the

[1]University of Wisconsin–Whitewater, USA
[2]Whitworth University, Spokane, WA, USA
[3]Johns Hopkins University, Baltimore, MD, USA
[4]East Tennessee State University, Johnson City, USA
[5]Eastman Chemical Company, Kingsport, TN
[6]University of Connecticut, Storrs, Connecticut

Corresponding Author:
Scott J. Peters, NWEA, 121 NW Everett St., Portland, OR 97209, USA.
Email: scott.peters@nwea.org

proportionality of identification rates across demographic groups. This is true both in the news media (e.g., Shapiro, 2021) and in the research community (e.g., Lee et al., 2021; Peters et al., 2019; Plucker & Peters, 2016). Most research published on the topic of identification has focused on the demographic representation of the population identified (e.g., Carman et al., 2020; Lakin, 2018; Naglieri & Ford, 2003; Peters & Gentry, 2010). For example, in a meta-analysis of identification systems used in published research literature, Hodges et al. (2018) focused on how well the populations of students identified under various criteria or with various assessments mirrored the overall student population. Far fewer papers have examined how well the identified students perform in the resulting services (e.g., Bui et al., 2014; Card & Giuliano, 2016; Redding & Grissom, 2021) or if the skills measured by the identification process make sense given the services to be provided (Gubbins et al., 2021).

Proportionality of representation is an important consideration when designing and evaluating identification systems and should be given priority in tandem with other criteria. As Lohman (2005) argued,

> We are not interested in identifying bright kids in order to congratulate them on their choice of parents or some other happenstance of nature or nurture. Rather, the goal is to identify those children who either currently display or who are likely to develop excellence in the sorts of things we teach in our schools. (p. 7)

Similarly, building on the Marland (1972) Report, the National Association for Gifted Children's (NAGC, 2019) official definition of giftedness states,

> Students with gifts and talents perform—or have the capability to perform—at higher levels compared to others of the same age, experience, and environment in one or more domains. They require modification(s) to their educational experience(s) to learn and realize their potential. (p. 1)

Both Lohman's and NAGC's definitions assert that the goal of identification is to find students who are relatively advanced in a particular domain or have the potential to be. The implied goal of identification is the appropriate provision of services to the students identified, but this guidance is general. Although district administrators could compare growth for identified and served students with those who were not, how to balance such an outcome with other criteria is not clear from the definitions.

The NAGC (2019) Programming Standards provide direction for developing gifted and talented services and establishing identification practices. These standards provide general outcomes for educators to apply, including language such as "Educators interpret multiple assessments in different domains, and understand the uses and limitations of the assessments in identifying the interests, strengths and needs of students with gifts and talents" (Assessment Standard 2.2.7, p. 2). Likewise, NAGC Programming Assessment Standard 2.3.2 states that "educators understand and implement district, state, and/or national policies designed to foster equity in gifted programming and services" (p. 2). These criteria are helpful in guiding practice but are not necessarily considered within a larger systems-based view that incorporates a combination of the outcomes or standards. Thus, while these standards are a great guide, they do not serve as evaluation criteria of gifted identification practices as a whole within a larger systems approach.

In gifted education, the absence of systemic evaluation criteria of identification processes has led to the proliferation of a wide range of identification systems or processes, some of which might be perfectly appropriate while others are seriously flawed or not appropriate for the services rendered. But absent benchmarks for quality, the field lacks a guide for decision-making and will continue to struggle on several fronts. First, the field will continue to struggle to find the students most likely to benefit from advanced learning opportunities (Redding & Grissom, 2021). Second, the field will be unable to compare different methods of identification. To make such comparisons, one needs commonly accepted metrics or goals to gauge the extent to which services and identification are appropriate and effective. Third, the field will continue to view practices in isolation without understanding that identification is a complex system of interrelated parts that work to achieve a purpose (appropriate education matched to student needs) and not an individual and isolated process. Fourth, without common metrics, the field will continue to struggle to expand support among K–12 educators and policymakers. Having a set of evaluation criteria to guide and evaluate identification processes could help resolve these limitations.

The Present Paper

In this article, we outline what we believe are the most important criteria to consider when judging the merits of an identification system: Cost, Alignment, Sensitivity, and Access (CASA). The description of these criteria will sound familiar to readers who have experience in the field. Each criterion has an established history and application in education and other fields, but none of the criteria are sufficient on their own. Rather, using all four criteria simultaneously and understanding the relationships within and among each allow for a more appropriate evaluation of identification systems. Together the criteria serve as a metric of identification system quality for the field.

In short, we believe a quality identification system is one that uses as few finite resources as possible (*cost*) for the maximum gain, is *aligned* with the services to be provided, is as *sensitive* as possible (meaning it correctly identifies a large percentage of the students eligible for the stated purpose/service), and assures universal *access* regardless of race, ethnicity, gender, disability, SES, home language, or other factors that are irrelevant to success in the service. For reasons we will discuss below, this final point regarding access can be challenging because it is not always clear exactly what skills are essential to success versus irrelevant. Not only are these the most important components to a gifted and talented identification system, applying them together would make the field more defensible to its critics and more internally consistent in its goals and reason for being.

These criteria are conception neutral, meaning they can be applied to identification processes based on a variety of different paradigms of giftedness. In this article, we do not argue for any particular conception of giftedness or identification instruments. Instead, what we believe is missing from the field is a *clear set of considerations that should be used to evaluate the appropriateness of any identification system*. To use an analogy, we take no position on what the speed limit should be, only that the field should all agree on how to measure speed. Agreement on these criteria will allow practitioners and researchers to have more fruitful discussions about identification.

In the first section of this article, we define each criterion, discuss prior usage of the term, and outline what aspects of the criterion are beyond the scope of identification. Then, in the second section, we provide examples of how these criteria are interrelated. Third, we discuss what schools can do beyond formal gifted identification to help further their gifted education goals. Finally, we discuss the limitations of the criteria.

The CASA Criteria

Cost

Cost can be defined in terms of any finite resource that is allocated to identifying students for placement in each advanced learning opportunity. Common costs include money spent on assessments, teacher time, and student time spent on identification-related practices. For example, if an assessment costs $10 per student, testing every student in the school costs more than testing a subset of those students. Similarly, individually administered or scored assessments cost significantly more in staff time than do group-administered assessments.

Costs are a reality in schools. School leaders are forced to find creative ways to manage and fund competing priorities—especially if there is limited or no state funding for assessing students for gifted programming (see Rinn et al., 2020). In many instances, the students who need access to gifted programs are often the same students who attend schools that cannot afford to universally screen. It is important to note that some of the data points used to make gifted identification decisions are also used for other purposes. For example, many standardized achievement tests are administered for purposes beyond gifted identification (e.g., Measures of Academic Progress [MAP]; Northwestern Evaluation Association, 2022). When this is the case, the lost instructional time for teachers to administer them and the dollars spent to purchase them should not be fully ascribed to gifted identification costs.

No matter how students are identified, tangible and intangible resources are expended. Considering identification cost allows a program coordinator or administrator to make the essential decision of whether the costs of the identification system can be justified for its intended purposes and make comparisons between the costs of different identification practices. Moreover, saving money is different from weighing costs. District leaders can work to save money by cutting assessments but, in doing so, they may increase costs (i.e., time and resource) and as a result may miss more students than they find. As will be discussed later, costs must be weighed in tandem with other criteria. Saving money is not helpful if, in doing so, program goals are not met.

There are other costs that need to be considered that are harder to quantify, most notably the long-term consequences of lost human potential. We believe those costs are real, but because they are years or decades removed from identification processes, they are beyond the scope of schools to take into consideration when making identification-related decisions. Although these costs must be weighed, it is not realistic for schools to incorporate them into their immediate criteria. The economic concept of *opportunity cost* is useful here as it refers to any unrealized gain had a resource been used for something else (Institute of Education Sciences [IES], 2020). When gifted and talented resource teachers spend 10 hr per week for 3 months every year administering assessments and facilitating the identification process, the other fruits of that labor, had it been applied to something else, would go unrealized. In those same 10 hr, they could have helped teachers design and use formative assessment data to differentiate instruction and develop talent. They could have facilitated small group math programs or implemented an affective curriculum to support students' social-emotional needs. Forgoing any of these benefits is a real "cost" of the identification system, even beyond the money used to purchase assessments.

Any resource expenditure must be weighed against the benefit it is providing. Low cost is not inherently good. The lowest cost identification system is not to have an identification system at all. That does not make the system good or preferable. Cost provides one component to evaluate an identification system but must be considered alongside the other criteria. Cost and cost-benefit are gaining attention when it comes to evaluating the appropriateness of an educational intervention. The IES (2020) developed a resource to help schools weigh costs and benefits when deciding on whether to purchase a resource or implement an instructional technique. Although it is popular to rank educational interventions based on the effect they have on student achievement (e.g., Hattie, 2008), such rankings ignore that these interventions come with different costs. For example, although reducing class sizes has a larger effect on student learning than does within-class grouping, it also comes at a far greater cost. Yeh (2007) conducted a similar ranking of interventions based on their cost-benefit as opposed to focusing solely on benefit. In doing so, he identified rapid assessment as providing the greatest effect on student learning for the lowest cost. Alongside the three other lenses of alignment, sensitivity, and access, the consideration of cost and cost-benefit analyses allows schools to make the most informed decision possible.

Alignment

Alignment focuses on the agreement between the skills, dispositions, abilities, and interests measured by the identification system and those that will be fostered in the service being provided. First, it is important to note that the nature of the identification and services will depend on the conception of giftedness being used by a particular school, state, or nation. For this reason, alignment also considers how well identification and services are aligned with the overall approach for services provided and the district's conception of giftedness. There are two additional components to alignment that also need to be considered: domain (inclusive of skills and interest in that domain) and level (the intensity of services needed). Both components are important, regardless of the conception of giftedness, but are grounded in aptitude theory (Corno et al., 2002), with aptitude defined as "degree of readiness to learn and to perform well in a particular situation or in a fixed domain" (p. 3). The emphasis on identifying and serving talents within domains, as opposed to general or multipotential giftedness, has been emphasized by Subotnik et al. (2012), Renzulli (1978), and Stanley (1977). *An effective identification system is one that measures the same skills and dispositions necessary for success in a particular service*. This conception of identification and service alignment is similar to the diagnostic-prescriptive approach that has been a hallmark of special education (Ysseldyke & Salvia, 1974) and part of ongoing talent search paradigms (Lubinski & Benbow, 2006; Stanley, 1977).

The ACT can serve as a useful (if imperfect) application of how the alignment criterion is applied. The ACT is meant to identify students who are likely to do well in and benefit from traditional higher education opportunities. This is not simply a philosophical approach. The ACT develops its college and career readiness benchmarks based on what level of content mastery is necessary for a student to have a 50% probability of earning a B or higher in a related, first-year college class (Allen & Radunzel, 2017). For example, a student who earns a 22 on the ACT mathematics subscale is predicted to have a 50% chance of earning a B or higher in a first-year college algebra class. Seen this way, the utility of the ACT is determined by how well it measures the skills necessary for a student to do well in a specific college course. This is the concept of alignment. Similarly, the Law School Admission Test (LSAT) is designed to measure student readiness for law school, the Medical College Admission Test (MCAT) measures mastery of the prerequisite skills for success in medical school, and the Graduate Management Admissions Test (GMAT) is designed to identify students who are most likely to benefit from programs such as the Master's in Business Administration. These assessments all apply the alignment criteria in a specific domain when evaluating success. If students who perform well on any of these tests end up doing poorly in the subsequent services or programs, then clearly, there is poor alignment. The ACT also includes measures of interest in particular work-related activities that allow students to identify professions and college majors that might be of interest. Both of these together allow students to be placed in courses and majors that best align with their skills and interests. This same approach should apply to gifted identification.

Similarly, alignment must consider level of service and student readiness. A range of services with different levels of intensity matched to student readiness is needed to effectively align service with diverse student needs (Dixson et al., 2020). Importantly, these services should be flexible. What is offered as an advanced learning opportunity will vary based on student needs from year to year and school to school. There is no such thing as generic "gifted services" that universally meet all advanced learning needs. Offering a student who has mastered calculus, a math service covering pre-algebra aligns with the domain of identification, but not the level of service the student needs based on their readiness. Aligning level of service with student readiness has an established tradition within the field (Lubinski & Benbow, 2006; Renzulli, 2005; Stanley, 1977). This alignment is important for all students. Everyone needs a curriculum matched to their strengths and needs in ways that promote ongoing growth. District leaders can use alignment criteria to support ongoing efforts for talent scouting and differentiation for all, allowing for collaboration among other teachers and specialists within the school.

A student who has high scores and demonstrated potential in math, but on-grade-level scores in reading, would need enrichment or acceleration in mathematics and on-level reading instruction. Yet, many one-size-fits-all programs identify students as gifted without further examining their strengths and needs or performance in separate domains. Consequently, in too many situations, all students who are identified as gifted are placed in the same standard gifted program that focuses on a curriculum that is agnostic to students' strengths or areas of demonstrated need. Alignment might require that schools examine subtest scores as well. Consider two students who have similar ability scores around 135. Student 1 could have a subtest score on quantitative reasoning at 146 and a verbal reasoning score of 126. Student 2 has a verbal reasoning score of 148 and a quantitative score of 120. Those two students show different demonstrated abilities and have different needs even though their composite score is the same. Another student might score very high in math achievement but performs and tests below grade-level standards in reading. Such a student would require different services than a peer who was advanced in both math and reading.

When alignment is weak, the students placed in a service do not benefit and many of the students who would benefit are never served. Returning to the Lohman (2005) quotation, if the purpose of gifted education is to foster and develop talent, but the students who are placed in a service will not benefit from it because of a lack of domain or level alignment, then the system is inadequate in meeting that students' needs and advancing their talents. Medical schools exist to train doctors. If the students who are admitted do not have the prerequisite skills to benefit from medical school, complete the program, and become doctors, then the program has failed to live up to its potential. Similarly, seventh-grade algebra exists to teach algebra to students who are ready for advanced mathematics. If the entrance criteria measures domain-irrelevant skills (e.g., making the teacher laugh) or if they measure math skills but at the wrong level (e.g., can a student count to 10), then the program will miss at least some of the students who would benefit. Alignment to the domain(s) of strength and the level of the need for intervention within that domain are critical considerations when evaluating any identification system.

Sensitivity

Sensitivity is a well-known concept in psychometrics as one way to measure diagnostic accuracy (Glaros & Kline, 1988; Simon & Boring, 1990). Within the context of education, sensitivity represents the proportion of students who would benefit from an educational service that are *correctly identified for that specific service*. With any advanced learning opportunity, the goal should be to identify and serve all students who would benefit. If a school provides the opportunity for seventh-grade students to take algebra, then the goal of an identification system is to ensure that every one of those students who has mastered the prerequisite skills is placed in the class. Following this logic, any student who would benefit from taking algebra, but is nevertheless left in traditional seventh-grade mathematics, is a failure of the system—and represents a decrease in sensitivity. For example, in 2007, the state of Michigan began testing all high school juniors with the ACT to find more students who would benefit from going to college. As a result, for every 1,000 low-income students who scored college-ready prior to the universal testing, another 480 were flagged as college-ready after universal testing. This means the old system was not very sensitive—it was missing roughly one third of all low-income college-ready students simply because it was not testing all students and therefore missing students that the system intended to find (Hyman, 2017).

In medicine, a test is highly sensitive if it *correctly* flags a large percentage of people who have a particular disease (correctly in that the individuals flagged do in fact have the disease—see Shreffler & Huecker, 2021). Some people are sick and a test is considered highly sensitive if the test correctly identifies those people. During the COVID-19 pandemic, the concept of sensitivity gained attention as many news stories and debates surround the sensitivity of various COVID-19 laboratory or "at home" tests. For example, a study of 3,004 patients in Finland found a COVID-PCR test as having a sensitivity of 89.9% (Kortela et al., 2021). This means the test correctly identified about 90% of the patients who had COVID-19 and falsely labeled 10% of those who had COVID-19 as not having COVID-19. Poor medical test sensitivity means sick patients go untreated. Poor gifted identification sensitivity means students who would have benefited from a service were never served, so their talents go undeveloped—they do not get the treatment they need. It is probably not realistic to assume that sensitivity in education meets medical levels of sensitivity. Regardless, different sensitivity levels of various practices can be compared to assess which practice successfully identifies more students who would benefit from the program.

Poor sensitivity is a problem for two reasons. The first, as alluded to earlier, is if a program exists to meet a particular learning need, then all students who have that need should be served. Otherwise, the program is leaving talent underdeveloped. For example, the entire reason for having Advanced Placement courses is to challenge and develop the skills of advanced students. If some of those students are left out of those courses, this represents a loss to the students, the school, and society at large. Second, prior research suggests that less-than perfect sensitivity in an identification system will fall hardest on students from traditionally underrepresented groups. A 2016 study by Card and Giuliano documented what happened when a district's gifted identification system went from being referral-based (meaning students were tested only following a teacher or parent referral) to a system based on performance on a universal screener. Under the universal screening system, the odds of a Black or Hispanic student being identified increased by 74% and 118%, respectively, compared with an increase of 12% for White students. The increased sensitivity was due to the greater access to identification procedures provided by the universal screener. Universal screening as a practice improved the identification system most for Black and Hispanic students. Importantly, the criterion for gifted identification did not change. All that changed was who was considered eligible for identification. Because sensitivity is often worse/lower for students from traditionally underrepresented groups, sensitivity is also an issue of equity. Improving the sensitivity of an identification system should help to improve the identification rate of students from traditionally underrepresented demographic groups. However, even very high sensitivity will not result in perfect proportionality across all demographic groups.

Just as cost can be minimized by doing nothing, sensitivity can also be maximized through a deceivingly simple action—allowing all students into a service. For example, proportionality was "achieved" by identifying 86% of students as gifted in Charlottesville, Virginia (see Knott, 2021). Such an approach would succeed in providing the service to all students who would benefit. However, the increased access would also result in providing the service to many students who may not benefit at increased cost. Moreover, this would also lead to incorrectly identifying students who would not benefit from the service. In psychometrics, this is called specificity (Glaros & Kline, 1988). In the scenario of potentially identifying many students who would not benefit from the service, perhaps a more useful framing is to consider how many of the students identified for a service would benefit from that service. How good is the identification system at finding the students who would benefit from the service while not finding too many students who would not benefit from it? This concept is commonly referred to as the positive predictive value (Glaros & Kline, 1988). Although positive predictive value is the more technically correct term, in our experience identifying more students than would benefit from the service is not a common occurrence. The opposite (i.e., missing students who would benefit from the service) is the more common error in identification. Because of this, we propose sensitivity as the more useful concept to consider when evaluating gifted identification systems.

Access

Access involves the removal of unintentional (or intentional) systematic barriers to gifted identification and providing equal opportunity to be identified. Although they will look different in every school, district, or country, common barriers to access include inequitable referrals for identification (McBee, 2006), deficit thinking (Ford & Grantham, 2003), lack of communication with stakeholders (Mun et al., 2020; Siegle et al., 2016), differential performance on standardized tests (e.g., cognitive ability, achievement; Erwin & Worrell, 2012), arbitrarily high cutoffs (Olszewski-Kubilius & Corwith, 2018), and larger societal inequality (e.g., poverty, lead exposure, adverse childhood experiences, child care access; Peters, 2021) inclusive of systematic racism (e.g., exclusionary policies and programming; Mun et al., 2020). Therefore, the concept of access is concerned with whether the identification system is measuring *group-specific* factors that are *irrelevant* to success in a particular service. A clear example of how to improve access is the replacement of a required referral with a universal screening process (McBee et al., 2016). A student's ability to get a referral from their parent or teacher is, at best, measuring many other irrelevant factors besides need for a given service. For example, research has shown that some demographic groups are more likely to be referred for testing or services than others (McBee, 2006; Siegle et al., 2010). Therefore, referrals represent a group-specific barrier to some students being identified. In addition, selection of assessments used for gifted identification should minimize bias on specific items (e.g., differential item functioning, measurement invariance (Millsap, 2011; Osterlind & Everson, 2009) as well as differential prediction between demographic groups (e.g., Lee, 2021; Peters & Engerrand, 2016). Thus, assessments used for identification should reflect fairness in educational testing (see *Fairness in Educational and Psychological Testing*; Jonson & Geisinger, 2022).

To evaluate an identification system based on access means considering the following question: Do two similarly qualified students have the same chance of being identified regardless of race, ethnicity, gender, income, disability service eligibility, or home language? Of course, schools can never know if two students are actually "similarly qualified" since all measures of readiness are imperfect in their own ways. But the guiding principle remains—schools should not predicate participation in a service on factors unrelated to success in that service (alignment) or on group-specific factors (access). For example, if a parent needs to ask for their child to be tested, that is a problem of access because the system is now measuring who has the cultural capital (e.g., social assets inclusive of educational system knowledge and resources) to know how to apply for gifted programs. Moreover, if families can include outside artifacts, letters of recommendation, or testing data from private psychologists, then the identification system is, in part, adding measures of socioeconomic status—whether the family has the resources to acquire and provide such evidence. Students whose families cannot afford such outside components or navigate the bureaucracy to get them do not have the same access as those who can and do. Many of these kinds of barriers can also be thought of as forms of institutionalized, systematic racism.

Historically, a student needed to take a test to be considered for admission to a specialized or exam high school in cities like New York City, Chicago, or Boston. Unfortunately, those tests were only offered on certain days (sometimes a single day), in a few locations, and outside the school day. This means the identification process is partly a measure of whether families have child care, transportation, and can take the time off to take a child to a testing site. All these practices would prevent certain *qualified* students from gaining access. Because students of color are more likely to be prevented from accessing services due to such practices, they represent cases of institutionalized racism.

Importantly, not only do some students (and groups of students) have to confront barriers in accessing gifted services, but some groups must overcome multiple barriers to access. For example, students who are Hispanic and English Language Learners (ELL) may have to overcome both cultural and linguistic barriers to accessing gifted services. Similarly, building on the term twice-exceptional (a student who has been identified as both gifted and having a learning disability), Davis and Robinson (2018) coined the term 3e to refer to students who are culturally diverse, gifted, and have some kind of disability. They recommend investigating how the specific experiences of students who have multiple exceptionalities can help prevent academic disparities. Similarly, Anderson (2020) urges educators and administrators to use an intersectional lens to "adequately identify and develop the talents of adolescent gifted Black girls"(p. 97). It is crucial to consider how the intersectionality of an individual's experience can create additional barriers to access (race and sex; race and disability status, income and race, gender and income, etc.; Cavendish & Samson, 2021; Crenshaw, 1989; Dixson, 2020; Goings & Ford, 2018). To do this, access factors must also be measured across intersectional lines (e.g., access rates for Black boys who are eligible for free/reduced lunch; students diagnosed as ADHD and are also dual language learners; low-income females in STEM); even then it is important to always recognize that students are individuals as well as members of various demographic groups.

The broader concepts of equity and societal inequality are real and urgent matters, both of which require efforts and resources that extend well beyond the gifted identification process. For this reason, we believe a quality identification system is one that *removes and proactively breaks down barriers so all students can be equally considered for* gifted services. Importantly, low barriers to access do not assure proportionality of representation across all groups. Even universal consideration systems where all students are tested or considered (e.g., universally screening all students for early algebra—see Hemelt & Lenard, 2020) still result in disproportionate representation. Due to the long history and ongoing inequality that exists in the United States, even an identification system that does not measure the kinds of construct-irrelevant, group-specific factors described earlier is likely to result in disproportionate representation.

The goal of the CASA criteria is to focus specifically on evaluating the consequences of the gifted identification process. As soon as a district puts an identification pathway in place, it should be reviewed through the eyes of access. Will students whose families lack transportation have a lower chance of being identified for services? Will a student whose family relocates throughout the year for work go unidentified simply due to the timing of assessments? Or are certain opportunities only available at certain buildings, meaning identification is partly a factor of where you live? Identification systems are not perfect. We need to be aware of the limitations of the system and ask ourselves, "What or who does my district's particular system miss and how can we adjust the system in ways that remove barriers and provide support?" Systematically probing identification procedures through the criteria of access can ensure that any barriers be identified, evaluated, and eliminated. In this way, access promotes equal opportunities for consideration, making it an essential component when evaluating gifted identification systems.

Interactions Between and Among Criteria

The previous section introduced the four criteria that we believe should guide the evaluation of gifted identification procedures. Each criterion independently assesses a relevant aspect, but how the criteria interact with each other provides the most useful information about the quality of gifted identification processes and the effects of specific changes. Changing practices to improve performance on one criterion will often influence performance on the other criteria. In this section, we provide an overview of possible interactions, using specific examples to demonstrate how schools should be aware of the effects of trying to improve performance on one criterion.

Example 1: Increasing Sensitivity and Access and the Impact on Other CASA Criteria

Many districts have sought to increase sensitivity (miss fewer students) and improve access by giving students multiple pathways/opportunities to be identified as gifted. For example, the state of Georgia allows students to be identified via several different routes that can include combinations of ability, achievement, creativity, and motivation scores. This way, students who have high ability, motivation, and creativity can be identified even if they have lower achievement scores. Having multiple opportunities increases sensitivity (e.g., reducing the likelihood that a student is not identified due to having a single bad day) and access, as students have more opportunities to be identified. These benefits to sensitivity and access also come with increased costs (in terms of time, money, and complexity). A district may decide such increased costs are desirable given the benefits of increased sensitivity and access. However, the lingering challenge relates to alignment.

When students can be identified through multiple pathways that each measure different factors, aligning all these pathways within domain and level may become difficult and costly in terms of the required services needed for each path. After all, a student with high ability, achievement, and motivation is very different from a student with high ability, motivation, and creativity, but low achievement. That one difference might necessitate different services. Hence, increasing pathways without changing services may create an alignment problem. This is why it is so important to consider identification changes in tandem with service changes. Services should be flexible. The Georgia identification process might be perfectly appropriate if schools respond to the identified needs with appropriate services. But if schools are not in a place to implement services related to creativity, then schools should not condition access to math and reading services on creativity scores. Increasing sensitivity and access while also increasing cost and potentially decreasing alignment does not mean multiple pathways systems are ineffective or undesirable. Instead, this situation highlights how once an identification process is viewed through all four criteria, a nuanced decision is required to determine the preferred path forward. Furthermore, districts can be more deliberate in assessing their approaches as well as in understanding and acknowledging the benefits and liabilities of their system.

Another example of potentially increasing sensitivity and access involves qualification thresholds. The decision to use the 99th versus the 90th percentile scores of a particular assessment (or group of assessments) may often depend on state policy. However, Olszewski-Kubilius and Corwith (2018) note that using lower cutoffs influences identification rates, particularly for students from low-income backgrounds (increasing access). But how does this affect the other criteria? Relying on lower cutoffs can also increase costs as more students are tested and served, but with the benefit of increased sensitivity. McBee et al. (2012) found that lowering cut scores from the 98th to 84th percentiles had a positive effect on access and sensitivity, but only the individual district can decide if such increases to sensitivity and access are worth the costs (of action or inaction) associated with serving so many additional students.

Example 2: Decreasing Identification Costs and the Impact on Other CASA Criteria

Many districts are concerned about the amount of time and money spent on identification. For example, to increase instructional time and direct more funds to student instruction, some districts are cutting back on testing. In terms of gifted identification practices, rather than universally screening all students in second and fifth grades for gifted service eligibility, a district might decide to only screen in second grade and then rely on referrals at all other grades (so only referred students would be tested). This would cut the amount of student time and overall money devoted to identification in half but what effect would this decision have on the other criteria?

Saving money has benefits, but this particular cost-savings action has other effects that may not be desirable. First, relying on teacher referrals would increase the cost in terms of time teachers spend on the task, even if it saves money on student testing; teacher time is neither free nor unlimited. Assuming all other identification practices remain the same and teachers are effective at aligning their referrals with the domain and level of services (which is not guaranteed), alignment should remain largely unchanged. This is because actual identification criteria would remain the same. Those measures would just be collected from fewer students. However, this new system would likely lead to lower sensitivity and access. Card and Giuliano (2016) documented a similar situation. When a district moved from universal screening to referral-based screening, roughly 25% fewer students were identified (decreased sensitivity), and the students missed (decreased access) were disproportionately students of color. This situation again points to the need for criteria. Monetary savings may appear viable by itself but is the cost of decreased access and sensitivity worth it? It is essential that the implications of choices like these are well understood beforehand.

Example 3: Improving Alignment and the Impact on Other CASA Criteria

Districts seeking to improve the alignment of their identification practices have several options available to them. But, as with the prior examples, these actions would have consequences on the other CASA criteria. For example, when identifying students for gifted services, many districts rely on nationally normed tests as part of their identification process. Using national norms requires students to be among the best in the nation to qualify for services. States that require high IQ scores for gifted identification implicitly use national norms. This can lead to many schools and districts identifying few students as gifted (low access) as well as sometimes requiring extremely high performance for services that do not always require it (low level alignment). Requiring a 130 IQ score to participate in a service that would benefit any student regardless of IQ score is a perfect example of poor alignment. Ignoring alignment as part of an identification system puts certain services at risk because they would benefit many students but were unnecessarily restricted to the few. If only the top scores are required, then the acceleration, dose, and intensity of the program must match.

Alternatively, using local norms compares student performance with the performance of other students in the same building or school district. Schools have long used a local norm reference group when selecting students for sports teams, roles in the school play, or who gets first chair in the school band or orchestra. The school basketball team does not omit a point guard from the team if all students fail to perform at the All-State or All-American performance level. Rather, they select the best performing student from the school and then provide appropriate coaching and instruction to match the needs of those students. Similar application of local norms can be applied in the academic context. In this scenario, shifting from national to local norms could increase the alignment between identification and the experience being offered in the service if the services provided are matched to the student needs in the school. This alignment would also increase sensitivity in identifying students likely to be successful in the experience. Moreover, research (e.g., Carman et al., 2020; Peters et al., 2019) suggests that transitioning to local norms would lead to massive gains in access (potentially quadrupling African American and tripling Latinx representation in gifted programming at the national level—although local factors influence the magnitude of effect at the school and district level). Disproportional underrepresentation would likely remain for these groups of students, but it would be substantially reduced (e.g., Backes et al., 2021). But once again, there are implications to consider. The resulting increased alignment, sensitivity, and access may cause many schools to identify more students for gifted services, resulting in higher costs for both identification practices and services.

In this section, we provided examples demonstrating interactions among the CASA criteria. One action or adjustment to the system can cause a chain reaction of other positive or negative effects on the other CASA criteria. It's important to note that the specific pattern and magnitude of interaction across criteria will vary across districts and states based on other relevant and contextual features. For example, adding new identification pathways may increase both cost and access in one district but may increase neither in another. The level of priority (i.e., what is the most important to the district) for each criterion will dictate the amount of change to other criteria that is tolerable to districts. Improvements to sensitivity and access with minimal increase to cost may be desirable, whereas those with substantial cost increases may require larger gains in sensitivity and access to be deemed worthwhile or feasible. Given this variability in district prioritization and expected effects on other CASA criteria, it is important for districts to evaluate how actions targeted at improving one criterion will affect the performance and desired outcomes on the other criteria. How to effectively manage the effects of changing specific actions on CASA criteria to improve performance is something all schools will need to constantly monitor. Moreover, even optimizing all CASA criteria does not guarantee that districts will be satisfied with the outcomes of their identification practices. What to do in that situation is the focus of the next section.

What Schools Can Do Beyond Gifted Identification: Applying Curriculum and Programming-Based Opportunities Prior *to Identification*

Although the CASA criteria emphasize identifying all students who would benefit from any given service and removing implicit or explicit barriers to access, there is no reference to parity or proportionality as a criterion of a quality identification process. Some disproportional representation is due to poor identification practices that would be identified and (hopefully) addressed by applying the CASA criteria. But as documented by Backes et al. (2021), Grissom and Redding (2016), and Long et al. (2022), most of the disproportionate representation across racial, ethnic, language and socioeconomic groups can be explained by achievement gaps that have developed due to a lack of access and opportunity prior to the time of identification. Because of this, efforts to mitigate disproportional representation should focus on ameliorating existing achievement gaps instead of on modifying identification procedures. It is not through modified identification procedures that greater representation is achieved, but rather through the mitigation of historical inequality and institutionalized systems that exacerbate gaps. Although this requires societal effort beyond schools, schools can do their part to narrow achievement gaps by providing planned learning opportunities for students prior to identification (i.e., access with supports). The hope is that the "frontloading" activities allow more access to all and include support that families with more resources generally seek and pay for outside school. In this way, the playing field can be leveled as much as possible through early interventions and talent scouting for strengths.

Frontloading for purposes of this article is defined as any deliberate learning experience designed to provide opportunities for students to develop their talents prior to identification (i.e., early intervention prior to identification in early grades, preparation prior to high school honors or AP courses). Frontloading talent development services prior to formal identification is a popular and evidence-based way educators bolster student supports and ensure that more students from traditionally underrepresented groups have mastered the prerequisite skills to be identified for and be successful in advanced learning opportunities. Ideally, as a result of implementing frontloaded opportunities, the population of students identified as gifted will look more like the population as a whole.

There are many types of frontloading experiences that have been shown to support student learning and increase the identification of students from traditionally underrepresented groups. These models include the Young Scholars Program (Horn, 2015; Horn et al., 2021), a model targeting Title 1 schools and those with high populations of second language and culturally different groups or students (Wells, 2020); STEM Starters+ that combines engineering curriculum with talent scouting (Robinson et al., 2018); several curricular offerings developed at William & Mary (for an overview of the & and Mary curriculum findings see (Robins, 2013; VanTassel-Baska & Stambaugh, 2008); and through the Mentoring Mathematical Minds curriculum (Gavin et al., 2013). There are also several frontloading curriculum resources that can be offered outside the school day with positive academic effects and increased identification of students from traditionally underrepresented groups (e.g., Adelson et al., 2019; Gavin et al., 2013; Horn et al., 2021; Kearney et al., 2019; Little et al., 2018). Importantly, effective frontloading is not limited to the early elementary level, but can also be offered in intermediate and middle school levels in preparation for advanced work in high school (e.g., Lee et al., 2009; Olszewski-Kubilius et al., 2004, 2017; Stambaugh, 2018).

Implementation of frontloading projects takes time, careful thought, and effort to be successful. Although projects can vary in purpose, goal, and targeted group, patterns of success among frontloading projects have emerged. The programs mentioned above included a strong professional development component, a priority placed on finding and nurturing student strengths, and a focus on introducing students to high level curriculum and instructional strategies with scaffolds as needed (e.g., start high and scaffold down instead of starting low and moving to the higher levels only when 100% mastery has been shown; Stambaugh, 2018). In addition, most projects incorporated the teaching of models for thinking like an expert and engaging in language of the discipline. They also increased dose or ongoing support beyond the school day through the implementation of summer, Saturday, or after-school programs. When implemented with fidelity and considering context and student need, the efforts described here narrow the early achievement gaps that can lead to disproportionate representation. Coupling frontloading opportunities with gifted identification practices that perform well on the CASA criteria can result in far more equitable gifted and talented programs.

Limitations

There are several limitations to the CASA criteria. First, they are limited in scope of evaluating gifted *identification* practices. Thus, the criteria do not evaluate other actions schools and communities can take to affect the lives of children before or after the gifted identification process, such as services provided to gifted students. Frontloading is a perfect example. This limited scope may overlook relevant factors affecting performance on the CASA criteria. For example, the negative effects of poverty (and disproportional representation of various sub-groups coming from impoverished backgrounds), and other societal and systemic inequities, are larger than the school system and will continue to impact identification regardless of the criteria used to evaluate. Similarly, many higher income families frontload their students with learning opportunities without even thinking about it. The greater exposure to these positive experiences among some student groups while other student groups are exposed to negative life experiences that hinder flourishing is a major driver of disproportionate representation. The CASA criteria should identify the presence of these unequal opportunities but will not necessarily identify or mitigate their cause.

Second, the criteria are not a recipe to solve all gifted education inequity problems. They are merely a lens to evaluate identification practices. The desire to improve equity in education is both urgent and strong. Therefore, we devoted more time to discussing additional efforts districts can take to further improve proportionality beyond making changes to identification systems. Nevertheless, without additional programs and educational initiatives in place to mitigate the negative effects of things like poverty and racism, disproportionality will remain. These criteria are meant to serve as tools to measure outcomes, not interventions to change outcomes. In this way, districts can make more educated and data-driven decisions about next steps for attaining defensible systems to provide equitable instructional practices for all students (Honig et al., 2014; Park & Datnow, 2009).

A third limitation of the CASA criteria is difficulty in comparing performance between different districts. Although performance on the CASA criteria could be used to make comparisons across districts, such comparisons will not always make for simple interpretations because different districts will have different starting points, priorities, and actions. Context, purpose, and goals matter. Moreover, the CASA criteria are only as strong as the district's ability and power to problem solve and intervene within their own system constraints. For example, a district with severely limited resources may prioritize cost out of financial necessity and not because of choice. Thus, its performance on other criteria may be hindered despite its efforts and intentions. Another district may be required by state policy to have a preset cutoff qualification score. Comparing this district with one in another state without such restrictions may not lead to clear inferences on how the two are performing on sensitivity or access.

Conclusion

Despite decades of K–12 practice and scholarly debate, the field lacks a set of criteria for how to assess identification systems. In this article, we introduce the CASA criteria to fill this gap. We believe that cost, alignment, sensitivity, and access are useful lenses through which to view gifted and talented identification systems. Applying the CASA criteria with an understanding of impact of each criterion on the other provides districts with clarity about the consequences to its identification actions, regardless of the paradigm or conception of giftedness it uses. Importantly, the CASA criteria do not tell a district what to measure or what procedures to use when making identification decisions. Rather, applying the CASA criteria helps districts accomplish the important goal of identifying if/when their identification practices are performing well. We believe that evaluating identification practices using the CASA criteria along with other practices (e.g., frontloading) can help school districts achieve the broader educational goal of providing appropriately challenging educational environments that maximize student learning in real time (Dixson et al., 2020).

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ORCID iDs

Scott J. Peters https://orcid.org/0000-0003-2459-3384
Matthew C. Makel https://orcid.org/0000-0002-3837-0088
Lindsay Ellis Lee https://orcid.org/0000-0003-4519-7209
D. Betsy McCoach https://orcid.org/0000-0001-9063-6835

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Author Biographies

Scott J. Peters is a senior research scientist at the Center for School and Student Progress at Northwest Evaluation Association (NWEA). His research work focuses on educational assessment, research design, gifted and talented student identification, equity within advanced educational programs and services, and educational policy. Note the bulk of the work for this manuscript was completed while he was a professor of assessment and research methodology at the University of Wisconsin–Whitewater.

Tamra Stambaugh is an associate professor and the Margo Long Endowed Chair in Gifted Education at Whitworth University. Her research interests focus on the development and impact of curriculum and instructional interventions on talent and expertise as well as access and opportunity support for academically advanced students from rural and low-income households.

Matthew C. Makel, PhD, is an associate research professor in the School of Education at Johns Hopkins University. His research focuses on academic talent development and research methods.

Lindsay Ellis Lee, PhD, is a research assistant professor at East Tennessee State University. Her research interests include evaluating systemic factors that relate to the development of talent as well as instrumentation and processes involved in identifying students for advanced learning opportunities.

Matthew T. McBee is a data scientist in the artificial intelligence/machine learning group at Eastman Chemical Company.

D. Betsy McCoach, PhD, is professor of research methods, measurement, and evaluation in the educational psychology department at the University of Connecticut. McCoach's research interests include latent variable modeling, multilevel modeling, longitudinal modeling, instrument design, and gifted education.

Kiana R. Johnson, PhD, is an associate professor in the Department of Pediatrics, Quillen College of Medicine, East Tennessee State University.

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