Exploring Teacher Biases When Nominating Students for Gifted Programs

Del Siegle
University of Connecticut

Teri Powell
Meridian, Idaho Joint School District #2

ABSTRACT

The purpose of this study was to identify student characteristics that might influence teachers in referring students for gifted programs. We developed a series of 12 student profiles to measure teacher bias and asked teachers to indicate how strongly they believed the students in the profiles should or should not be recommended for their district gifted program. We found the ability to do mental computations overshadowed completion of schoolwork, and the esoteric nature of student interest appeared to be equivalent to completion of schoolwork. We found that completing schoolwork was not a factor when students possessed a large storehouse of information. We also learned that classroom teachers may be more inclined than gifted specialists to focus on student weaknesses, rather than student strengths.

If one does not know to which port one is sailing, no wind is favorable.

—Seneca

Classroom teachers observe students in a variety of situations and under a variety of conditions. Their unique perspective is valuable when considering students for gifted and talented programs. Although standardized achievement tests and intelligence tests play a key role in the identification of gifted and talented students, many school districts include teachers' ratings of students as part of their selection criteria. Often, these ratings are used to form a pool of students to be tested for these programs, and, increasingly, the ratings are included as part of a total identification system. Because teachers' ratings of students play an important role in identifying gifted students, it is important to investigate whether teachers' beliefs, stereotypes, biases, and expectations influence their selection of students for gifted and talented programs. The purpose of this study was to identify student characteristics that might influence teachers in referring students for gifted and talented programs.

Background of the Study

Whether or not teachers are qualified to identify gifted students has been the topic of much debate during the last half-century (Gagné, 1994; Hoge & Cudmore, 1986; Pegnato & Birch, 1959; Renzulli & Delcourt, 1986; Rohrer, 1995). For the past 40 years, there has been a general perception that teachers are ineffective at identifying gifted and talented students. This perception stemmed from a 1959

PUTTING THE RESEARCH TO USE

The first step in identification should be to clearly define what is meant by "gifted." Teachers should be trained to recognize specific characteristics of giftedness as they relate to program goals and objectives. This should address specific student identification criteria that matches a district's gifted and talented program definition. Efforts should be made to help teachers understand that there is no single definition for an "all-purpose" gifted child and that children may not exhibit gifted characteristics in all aspects of their lives. Educators who are asked to nominate students for gifted programs should be encouraged to identify characteristics that indicate giftedness, rather than focusing on reasons why a student is not gifted. Because unexpected behaviors often attract attention, teachers should be cautioned not to nominate students simply because they "do not fit the mold." "Being different" is not a sufficient reason for inclusion in a gifted program. With training, teachers will be better equipped to identify students whose needs may be met by participation in their district's gifted program.

study by Pegnato and Birch, which reported that teachers were poor at identifying students who had IQ scores over 130. This work has been frequently cited to support the opinion that classroom teachers are not reliable in identifying gifted and talented students in their classrooms.

Gagné (1994) criticized the methods employed by Pegnato and Birch (1959). He reanalyzed their data and found that teachers were as effective as most other sources of information in identifying gifted and talented students. Other research (Hoge & Cudmore, 1986; Rohrer, 1995) has also indicated that teachers are not the unskilled identifiers of gifted students that Pegnato and Birch reported. Several studies have supported the practice of teachers completing rating scales of student behaviors (Hunsaker, Finley, & Frank, 1997; Renzulli, Smith, White, Callahan, & Hartman, 1976; Renzulli et al., 1997).

While research appears to support the use of teachers' ratings of student behaviors, there is limited research on teacher biases when assessing student giftedness. For example, do teachers use similar criteria when nominating males and females? What role does student interest play? How important are classroom behaviors such as completing homework?

Gender

One area of concern in identifying students for gifted programs is gender bias. Teachers spend more time interacting with male students in verbal and nonverbal ways (Mann, 1994; Oliveres & Rosenthal, 1992; Sadker & Sadker, 1993). Teachers face male students more when talking (Sadker & Sadker, 1995) and give them more detailed instructions (Oliveres & Rosenthal, 1992) than they do female students. Overall, boys and girls exhibit different interests and talents (Benbow, 1988; Gagné, 1993). Teachers may develop stereotypes based on these expected differences.

Gagné (1993) reported that males were considered to be more able in areas requiring physical or technical skill and females were perceived as performing better in the areas of artistic talent and socio-affective domains. Bernard (1979) found that "irrespective of the sex of teacher or student, or course of study, students who are perceived as masculine in role orientation are likely to be evaluated more highly than students who are not" (p. 562). Dusek and Joseph (1983) also found that "teachers were more likely to expect high-achieving students, regardless of gender, to be masculine or androgynous, and low-achieving students, regardless of gender, to be feminine or undifferentiated" (p. 338).

Specificity of Selection Criteria

When left to their own devices, teachers tend to focus on skills associated with academic performance and less on creativity, leadership, and motor skills when nominating students to gifted programs (Guskin, Peng, & Simon, 1992; Hunsaker, Finley, & Frank, 1997). Borland (1978) showed that nomination accuracy improved by asking teachers for nominations based on singular criteria related to their gifted program, rather than global judgments. Kolo (1999) found that instruments that "explicitly and very clearly spell out the traits or characteristics to be used by nominators . . . were more effective than those ones in which the traits to be rated or checked are not so obvious" (p. 181).

Attention to Weaknesses Over Strengths

Weber (1999) reported that teachers are often concerned about misidentifying students. Generally, the concern relates to overidentifying, rather than underidentifying.

> Teachers seldom have any reluctance in identifying students for remedial help in core subjects, or in sending them to a specialist for instruction to improve weaknesses in basic skills. Somehow, the reverse must be made clear: *the needs of gifted students are just as strong and as worthy of specialized instruction as any other special category of students*. (Weber, p. 187)

He warned that teachers should understand that sending students to gifted programs does not imply teaching inadequacy on the teacher's part.

In summary, masculine behavior appears to be more accepted by nominators. Nominations improve when teachers are provided with specific criteria. Teachers may be reluctant to identify borderline students.

Methodology

Instrument

We developed a series of student profiles to measure teacher bias and asked educators to indicate how strongly they believed the students in the profiles should or should not be recommended for their district's gifted program. We created 12 student profiles based on Tannenbaum's (1997) concept of producing and nonproducing gifted students (see Figure 1). We included student productivity in the profiles because gifted students who are not producing may be overlooked for gifted programs. The definition of underachievement often includes a discrepancy between school grades (productivity) and IQ or achievement scores

(Reis & McCoach, 2000). This discrepancy is particularly concerning to parents and teachers. We wished to know how important student productivity was in the nomination process. Producing students were defined as those who completed and submitted schoolwork and nonproducing students as those who did not complete or submit schoolwork.

Four of the 12 profiles featured students with strong mathematic skills, two of whom demonstrated excellent problem-solving skills and two of whom demonstrated excellent mental computation skills. The next four profiles featured passion for reading (or lack thereof): Two of these profiles depicted students who were avid readers and two depicted students who were not interested in reading. The final four profiles focused on student background knowledge: Two profiles depicted students with a strong passion in a specific topic, while two of the profiles depicted students with knowledge and interests that covered a wide range of topics. For each of the six pairs described above, one featured a student who was engaged in classwork (producer) and one featured a student who did not complete classwork (nonproducer). In total, 12 different profiles were created. A panel of three judges evaluated the 12 profiles. Each judge correctly identified which of the 12 categories in Figure 1 matched each profile.

An identical set of these same 12 profiles was also created in which only the gender of the student's name was changed; while one profile featured Brenda, an identical one featured Brian. Anglo names were used to avoid adding the additional selection criterion of ethnicity. Similarly, none of the profiles contained information about the students' socioeconomic status.

We specifically designed the profiles to measure the impact of a variety of academic and personality factors. We chose the content areas of mathematics and reading because gender stereotypes are often associated with them. Males are sometimes expected to perform better in mathematics, while females are expected to enjoy reading more. We elected to divide knowledge into "specific" and "broad" because both are widely used for identification. For example, the Scales for Rating the Behavioral Characteristics of Superior Students (Renzulli et al., 1997) include separate statements for a large storehouse of information about (a) a specific topic and (b) a variety of topics.

The profiles did not include any information about the students' test scores. They did describe work habits and interests. The following profile was presented for a producing, mathematics, problem-solving female: "Anne really enjoys working on the story problems and logic activities that come at the end of each chapter in her math book. She enjoys solving puzzles and matrices that her teacher puts up for weekly challenges and is usually the first one with a complete and correct solution. She sticks with a problem until she has a solution. If a solution doesn't come to her right away, she goes on to other activities, but always comes back and tries a different approach. Anne always hands in her math homework, although she has a tendency to make computational errors or to forget to do some problems."

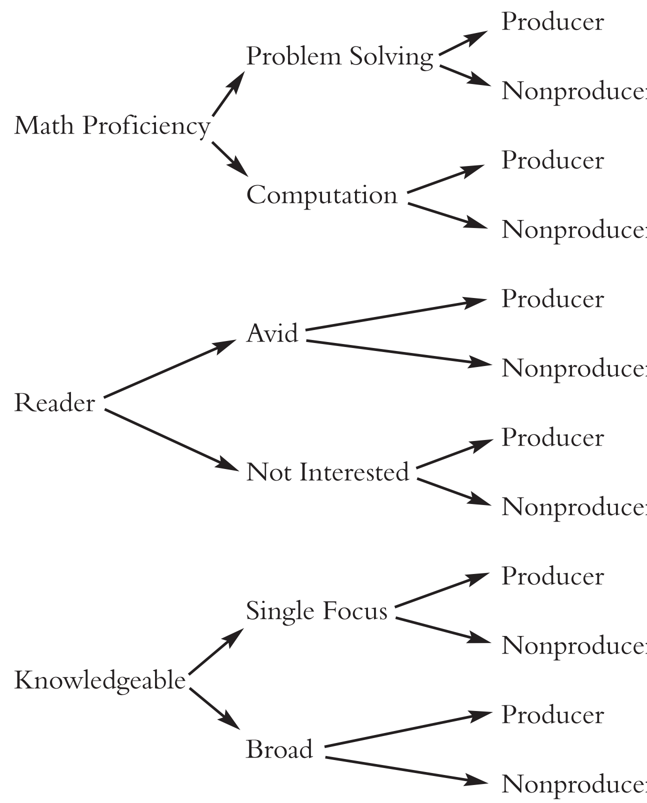

Figure 1. Characteristics of student profiles

Subjects and Procedures

All of the profiles were organized into two sets of 12. Each set contained 6 male and 6 female profiles, which together represented each of the 12 categories shown in Figure 1. Ninety-two educators (58 classroom teachers and 34 gifted and talented specialists) who were attending a weeklong regional gifted and talented conference in the Northwest were asked to evaluate one of these two sets of profiles. The majority of the educators were female (83%), and 40% of them reported having no training in gifted and talented education prior to attending the conference.

The educators evaluated the profiles after attending 4 full days of the conference. They were instructed to "Make recommendations of students who should be included in a gifted and talented program" based on a four-point Likert scale where 1 = "Definitely NOT include," 2 = "NOT include with reservations," 3 = "Include with reservations," and 4 = "Definitely include." We purposefully did not provide selection criteria. We believe this forced the educators to base their selections on personal experience and the beliefs or preconceptions they held about gifted students.

We analyzed data for the 12 profiles with a series of six 2 (student gender) x 2 (raters' teaching role) x 2 (student productivity) repeated measures ANOVAs (see Figure 2). Student productivity (producer or nonproducer) was the repeated measure. The dependent variable was the students' rating score (1–4). We performed six repeated measures ANOVAs (math problem solving, math computation, avid reader, not interested in reading, single-focus knowledge, and broad knowledge). We did not use a repeated measures MANOVA omnibus test because the educators completed different combinations of profiles, which prohibited this. Because there were multiple ANOVAs, a Bonferroni type adjustment (Tabachnick & Fidell, 1996) was made for inflated Type I error. We assigned alpha for each analysis to $p \leq .01$. In addition, we calculated overall mean rating scores for each of the six performance areas (e.g., mathematics problem solving). We performed three paired *t* tests on these data: one for each of the areas of mathematics, reading, and knowledge (e.g., difference in rating of mathematics problem solving and mathematics computation).

		Prod.	Nonprod.
Male Student	G/T Specialist	x	x
	Classroom Teacher	x	x
Female Student	G/T Specialist	x	x
	Classroom Teacher	x	x

Figure 2. Repeated measures (2 x 2 x 2) data analysis design

Results

Mathematics

Students with math problem-solving skills who completed their schoolwork (producers; *M* = 3.18, *SD* = .72) received higher nomination scores than similar students who did not complete their schoolwork (*M* = 2.55, *SD* = 1.00; *d* = .73). We found no difference between the ratings of males (*M* = 2.80, *SD* = .88) and females (*M* = 2.91, *SD* = .97) with math problem-solving skills. Gifted and talented specialists (*M* = 3.18, *SD* = .76) were more likely to nominate students with math problem-solving skills, regardless of whether they completed their schoolwork, than classroom teachers (*M* = 2.67, *SD* = .97) were to nominate them (*d* = .59; see Table 1).

Students who did not complete their schoolwork, but who used mental computation skills (*M* = 3.02, *SD* = .79) earned higher ratings than students who did complete their schoolwork, but who used traditional paper-and-pencil computation methods (*M* = 2.19, *SD* = .73; *d* = 1.09). We did not find a difference in the ratings of males (*M* = 2.58, *SD* = .87) and females (*M* = 2.67, *SD* = .88). Gifted and talented specialists (*M* = 2.85, *SD* = .94) valued students with mental computation skills more than classroom teachers (*M* = 2.49, *SD* = .80) valued them (*d* = .41; see Table 2).

Overall, students with mathematical problem-solving skills (*M* = 2.91, *SD* = .72) received higher ratings than students with mental computation skills (*M* = 2.63, *SD* = .58), $t(90) = 3.24$, $p < .01$, *d* = .43.

Reading

We did not find a rating difference between students who completed their schoolwork (*M* = 3.53, *SD* = .73) and enjoyed reading and those students who did not complete their schoolwork (*M* = 3.26, *SD* = .97) and enjoyed reading. We did not find a difference between the ratings of male (*M* = 3.40, *SD* = .81) and female (*M* = 3.39, *SD* = .92) students who enjoyed reading. We also did not find a difference between the ratings by classroom teachers (*M* = 3.26, *SD* = .93) and gifted specialists (*M* = 3.62, *SD* = .70) of students who enjoyed reading (see Table 3).

Of the students who did not enjoy reading, those who completed schoolwork (*M* = 2.58, *SD* = .82) were rated higher than those who did not (*M* = 1.91, *SD* = .90; *d* = .78; see Table 4). We did not find rating differences for males (*M* = 2.33, *SD* = .79) and females (*M* = 2.14, *SD* = 1.05) or rating differences by classroom teachers (*M* = 2.19, *SD* = .97) and gifted specialists (*M* = 2.32, *SD* = .83) with these students who did not enjoy reading.

Table 1

ANOVA Results for Students With Math Problem-Solving Skills

Source	*SS*	*df*	*MS*	*F*
Student's Productivity	5.43	1	5.43	7.23**
Student's Gender	1.12	1	1.12	1.48
Rater's Teaching Role	4.50	1	4.50	5.99**
Productivity x Gender	.02	1	.02	.03
Productivity x Role	.07	1	.07	.10
Gender x Role	.82	1	.82	1.09
Productivity x Gender x Role	.18	1	.18	.23
Error	62.35	83	.75	

Note. ** $p \leq .01$

Table 2

ANOVA Results for Students With Math Computation Skills

Source	*SS*	*df*	*MS*	*F*
Student's Productivity	16.56	1	16.56	29.69***
Student's Gender	.09	1	.09	.17
Rater's Teaching Role	4.11	1	4.11	7.36**
Productivity x Gender	.28	1	.28	.51
Productivity x Role	.79	1	.79	1.41
Gender x Role	.17	1	.17	.30
Productivity x Gender x Role	.07	1	.07	.12
Error	45.73	82	.56	

Note. ** $p \leq .01$ *** $p \leq .001$

Table 3

ANOVA Results for Students Who Enjoy Reading

Source	*SS*	*df*	*MS*	*F*
Student's Productivity	1.10	1	1.10	1.58
Student's Gender	.01	1	.01	.002
Rater's Teaching Role	2.25	1	2.25	3.22
Productivity x Gender	.29	1	.29	.41
Productivity x Role	1.38	1	1.38	1.98
Gender x Role	2.06	1	2.06	2.95
Productivity x Gender x Role	.74	1	.74	1.07
Error	58.50	84	.70	

Table 4

ANOVA Results for Students Who Do Not Enjoy Reading

Source	*SS*	*df*	*MS*	*F*
Student's Productivity	7.88	1	7.88	10.82**
Student's Gender	.13	1	.13	.18
Rater's Teaching Role	.10	1	.10	.13
Productivity x Gender	1.12	1	1.12	1.54
Productivity x Role	.82	1	.82	1.13
Gender x Role	1.71	1	1.71	2.35
Productivity x Gender x Role	.34	1	.34	.47
Error	58.25	80	.73	

Note. ** $p < .01$

Overall, students who were interested in reading (M = 3.37, SD = .60) received higher ratings than students who were not interested in reading (M = 2.30, SD = .67), $t(90)$ = 12.49, $p \leq .001$, d = 1.69.

Knowledge

We were surprised to find that students with passionate interests in the single topic of dinosaurs (M = 2.74, SD = 1.01) who completed schoolwork received similar ratings to those with a passionate, singular interest in aviation (M = 3.02, SD = 1.09) who did not complete schoolwork. Male students (M = 3.06, SD = 1.09) who exhibited a single-sided interest received similar ratings as females (M = 2.70, SD = 1.00) with single-sided interests. Gifted specialists (M = 3.15, SD = .94) rated students with a singular interest higher than classroom teachers (M = 2.74, SD = 1.10) rated them, d = .40 (see Table 5).

We did not find a difference between students with a broad knowledge base who completed their schoolwork (M = 3.38, SD = .68) and those students with a large general knowledge base who did not complete their schoolwork (M = 3.11, SD = 1.05). We also did not find a difference in the ratings of male students (M = 3.35, SD = .81) and female students (M = 3.15, SD = .96) or ratings by classroom teachers (M = 3.11, SD = .95) and gifted specialists (M = 3.35, SD = .81) with regard to students who possessed a broad, general knowledge base (see Table 6).

Overall, students with broad knowledge bases (M = 3.24, SD = .63) received higher ratings than students with intense single interests (M = 2.92, SD = .91), $t(91)$ = 3.45, $p \leq .001$, d = .42.

Table 5

ANOVA Results for Students With Specific (Single-Sided) Knowledge

Source	*SS*	*df*	*MS*	*F*
Student's Productivity	2.74	1	2.74	2.55
Student's Gender	4.73	1	4.73	4.41
Rater's Teaching Role	6.10	1	6.10	5.69*
Productivity x Gender	1.16	1	1.16	1.08
Productivity x Role	.01	1	.01	.01
Gender x Role	.27	1	.27	.26
Productivity x Gender x Role	1.26	1	1.26	1.18
Error	89.03	83	1.07	

Note. *$p < .05$

Table 6

ANOVA Results for Students With Broad General Knowledge

Source	*SS*	*df*	*MS*	*F*
Student's Productivity	.80	1	.80	1.08
Student's Gender	.33	1	.33	.45
Rater's Teaching Role	1.65	1	1.65	2.21
Productivity x Gender	.83	1	.83	1.11
Productivity x Role	1.20	1	1.20	1.61
Gender x Role	.60	1	.60	.81
Productivity x Gender x Role	2.31	1	2.31	3.10
Error	61.02	82	.74	

Discussion

Generally, the mean scores were high for the students featured in our profiles (see Table 7). This indicates that the educators recognized the characteristics of giftedness we embedded in the profiles. A female who was not interested in reading and who failed to complete schoolwork and a male who used traditional math computations and completed homework were the most likely students to not be recommended for a gifted program. The large standard deviations do indicate a wide variation in educators' comfort nominating students. Further research is needed to learn why these differences exist.

Guskin et al. (1992) and Hunsaker et al. (1997) reported that teachers who were left to their own devices when identifying gifted students focused on skills associated with academic performance. While the educators in our study sometimes rated students who completed their schoolwork higher than students who did not, we found profiles where no difference existed and even where those who did not complete their schoolwork assignments received higher ratings. Generally, students who completed schoolwork received higher ratings than students who did not complete schoolwork. However, some student characteristics overshadowed homework completion. For example, students who did not complete schoolwork, but were adept at mental computations scored higher than students who did complete their homework, but used traditional paper-and-pencil computations (in our profiles, the producers used traditional paper-and-pencil computations and our nonproducers used mental math that did not show their work). The educators probably believe that mental computation ability is indicative of the gifted characteristics of abstract thinking and good memory. We also found that completing schoolwork was not a factor if students possessed a broad range of information or if they were avid readers. Completing schoolwork did not appear to be a factor if the student enjoyed reading, even though it *was* a factor with students who did *not* enjoy reading. This indicates that these educators believe that gifted students enjoy reading. Apparently the enjoyment of reading stands out and overshadows other academic factors.

The topic of students' interests appeared to be a factor in their nomination. When we created the two passionate, singular knowledge profiles, one portrayed a student with an interest in aviation who did not complete schoolwork, and the other portrayed a student with an interest in dinosaurs who did complete schoolwork. The student who was interested in aviation and did *not* complete schoolwork nonetheless received ratings on par with the one who was interested in dinosaurs and *had* completed schoolwork. Dinosaurs are a common topic of interest to most elementary students, while an intense interest in aviation is more unusual. It may be that the esoteric nature of students' interests influences their nomination. Many checklists for identifying giftedness include "unusual interests" as a characteristic of gifted and talented students. It may be that unexpected interests produce unexpected behaviors, which, in turn, attract attention. In some cases, this may increase the likelihood of students being nominated for gifted and talented programs. Tannenbaum (1986) described gifted traits as being both valued and scarce. It could be that some students are nominated for programs not because they exhibit exceptional talent, but rather because they do not "fit the mold." Program coordinators should caution teachers that "being different" is not a sufficient reason for inclusion in a gifted program.

Table 7

Mean and Standard Deviation Scores for Each Profile

	Math				Reading				Knowledge			
	Problem Solving		Computation		Avid Reader		Unint. Reader		Single Focus		Broad Range	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Producer												
Male	3.16	.86	2.18	.89	3.36	.87	2.72	.71	2.82	1.07	3.42	.71
Female	3.19	.83	2.47	.91	3.21	.90	2.49	.96	2.72	1.05	3.43	.66
Nonproducer												
Male	2.79	.94	3.16	.76	3.50	.71	2.28	.91	3.29	1.03	3.30	.87
Female	2.68	1.01	2.89	.94	3.52	.79	1.88	.83	3.00	.93	3.07	1.01

Note: Based on a four-point Likert scale where 1= "Definitely NOT include," 2 ="NOT include with reservations," 3="Include with reservations," and 4= "Definitely include."

Overall, we found that educators valued problem-solving skills more than computation skills. They rated avid readers higher than students who did not enjoy reading. They also rated students with broad knowledge bases higher than students with a passion about a single subject. All of these characteristics are frequently found on lists describing giftedness. The educators in our sample were exposed to these particular characteristics during their weeklong conference, and this exposure appeared to influence their selection of students.

In three instances, gifted and talented specialists produced higher ratings than classroom teachers. Gifted and talented specialists valued mental computations and problem solving more than classroom teachers. They also rated single-interest learners higher. Classroom teachers never rated a particular student higher than he or she was rated by gifted and talented specialists. It may be that classroom teachers are more inclined to focus on student weaknesses, rather than student strengths, while gifted specialists concentrate more on students' strengths, rather than their weaknesses. An example of a nonproductive weakness presented as part of a profile was, "The class work Jason hands in often has unfinished sections. Long-term projects are frequently completed at the last minute." This is an area that warrants further research. Since programs for the gifted often focus on student strengths and interests, gifted and talented coordinators may be more sensitive to this. Classroom teachers, on the other hand, are often cast in a diagnosis and remediation role with their students and, therefore, may be more sensitive to student weaknesses. Teachers should be trained to recognize and appreciate a variety of student talent areas. As Siegle (2001) noted, "Efforts should . . . be made to help teachers understand that there isn't an all-purpose gifted child, and children do not need to exhibit gifted characteristics in all aspects of their lives" (p. 24). Classroom teachers who are asked to identify gifted and talented students should be encouraged to identify characteristics that indicate giftedness, rather than to look for reasons why children are not gifted. Because nonproducing students were sometimes rated similarly or higher than producing students, we surmise that negative characteristics are overlooked when students strongly exhibit characteristics associated with giftedness.

We did not find gender bias in our study. Several of the gender comparisons approached, but did not reach, statistical significance, which indicates that, if gender biases exist, they are minimal. The work that has been done on equal opportunity regardless of gender may be having an impact.

The educators in our study appeared to use selection criteria similar to that found on behavioral checklists. We found limited bias, which was most likely to surface when student profiles contained conflicting characteristics such as positively exhibiting one behavior and negatively exhibiting another. Further research is needed in this area.

We believe researchers ought to reexamine the behavior characteristics used to describe gifted students. Because our research indicated that educators are influenced by published behavior characteristics of giftedness, the population and ecological validity of popular checklists ought to be reexamined. As long as we use popular lists of characteristics to identify students, we risk failing to identify those who do not fit the listed characteristics. For this reason, researchers must reexamine the predictive validity of current characteristic checklists as they relate to different types of gifted programs.

The first step in identification should be to define clearly what is meant by "gifted." In our study, we left the definition to the rater's discretion. Without a clear definition, those who are asked to nominate students must rely on previous training, stereotypes they have developed, or both. The latter could result in inherent biases. As an ancient proverb attributed to Seneca claims, "If one does not know to which port one is sailing, no wind is favorable." Internal program consistency mandates the alignment of identification criteria and program services. Gifts and talents manifest themselves in various ways. Educators should be trained to recognize specific criteria that match the area of talent that a program is designed to service. Such training will go a long way toward improving referrals for gifted and talented programs.

Limitations

Because we used a convenience sample to collect our data, these results have limited generalizability. The classroom teachers and gifted and talented specialists were attending a conference on gifted and talented education. First, we can assume that they had some interest in the field of gifted and talented education by their attendance at the conference. This study should be replicated with other populations. Second, they had some familiarity with the field because the data were collected near the end of the conference. Educators who have not received training may exhibit biases that we did not find with our sample. Future research is warranted to determine the amount of training that is needed to counter the stereotypes that educators hold.

The classroom teachers' ratings of students may also have been lower than the ratings of gifted and talented specialists because the teachers were concerned about misidentifying students. This is also an area for further research.

The profiles used for this study are also a limitation. While we believe that the profiles represented the characteristics we indicated and a panel of content area experts concurred, we did not specifically ask the raters what about a particular profile troubled or pleased them. Future researchers who use this process may wish to collect qualitative data from the respondents to explain the reasoning behind their ratings. The process of creating interesting profiles, yet restricting the characteristics of the profile's subject, was difficult. For this reason, we incorporated multiple characteristics into each profile. Future researchers may wish to explore the interactions of various character combinations, as well as the characteristics in isolation. They may also wish to explore the impact of concomitant characteristics on student ratings.

References

Benbow, C. P. (1988). Sex differences in mathematical reasoning ability in intellectually talented preadolescents: Their nature, effects, and possible causes. *Behavioral and Brain Sciences, 11,* 169–232.

Bernard, M. E. (1979). Does sex role behavior influence the way teachers evaluate students? *Journal of Educational Psychology, 71,* 553–562.

Borland, J. H. (1978). Teacher identification of the gifted: A new look. *Journal for the Education of the Gifted, 2*, 22–32.

Dusek, J. B., & Joseph, G. (1983). The bases of teacher expectancies: A meta-analysis. *Journal of Educational Psychology, 75*, 327–346.

Gagné, F. (1993). Sex differences in the aptitude and talents of children as judged by peers and teachers. *Gifted Child Quarterly, 37,* 69–77.

Gagné, F. (1994). Are teachers really poor talent detectors? Comments on Pegnato and Birch's (1959) study of the effectiveness and efficiency of various identification techniques. *Gifted Child Quarterly, 38,* 124–126.

Guskin, S. L., Peng, C. J., & Simon, M. (1992). Do teachers react to "Multiple Intelligences"? Effects of teachers' stereotypes on judgments and expectancies for students with diverse patterns of giftedness/talent. *Gifted Child Quarterly, 36,* 32–37.

Hoge, R. D., & Cudmore, L. (1986). The use of teacher-judgment measures in the identification of gifted pupils. *Teaching and Teacher Education, 2,* 181–196.

Hunsaker, S. L., Finley, V. S., & Frank, E. L. (1997). An analysis of teacher nominations and student performance in gifted programs. *Gifted Child Quarterly, 41,* 19–24.

Kolo, I. A. (1999). The effectiveness of Nigerian vs. United States teacher checklist and inventories for nominating potentially gifted Nigerian preschoolers. *Roeper Review, 21,* 179–183.

Mann, J. (1994). *The difference: Growing up female in America*. New York: Warner Books.

Oliveres, R. A., & Rosenthal, N. (1992). *Gender equity and classroom experience: A review of the research.* New York: Queens College. (ERIC Reproduction Service No. ED 366 701)

Pegnato, C. W., & Birch, J. W. (1959). Locating gifted children in junior high schools: A comparison of methods. *Exceptional Children, 25,* 300–304.

Reis, S. M., & McCoach, D. B. (2000). The underachievement of gifted students: What do we know and where do we go? *Gifted Child Quarterly, 44,* 158–170.

Renzulli, J. S., & Delcourt, M. A. B. (1986). The legacy and logic of research on the identification of gifted persons. *Gifted Child Quarterly, 30*, 20–23.

Renzulli, J. S., Smith, L. H., White, A. J., Callahan, C. M., & Hartman, R. K. (1976). *Scales for rating the behavioral characteristics of superior students.* Mansfield Center, CT: Creative Learning Press.

Renzulli, J. S., Smith, L. H., White, A. J., Callahan, C. M., Hartman, R. K., & Westberg, K. L. (1997). *Scales for rating the behavioral characteristics of superior students.* Mansfield Center, CT: Creative Learning Press.

Rohrer, J. C. (1995). Primary teacher conceptions of giftedness: Image, evidence, and nonevidence. *Journal for the Education of the Gifted, 18,* 269–283.

Sadker, M., & Sadker, D. (1993). Fair and square? Creating a nonsexist classroom. *Instructor, 102*(7), 44–45, 67–68.

Sadker, M., & Sadker, D. (1995). *Failing at fairness: How our schools cheat girls.* New York: Touchstone Press.

Siegle, D. (2001). Overcoming bias in gifted and talented referrals. *Gifted Education Communicator, 32*(1), 22–25.

Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics* (3rd ed.). New York: HarperCollins College Publishers.

Tannenbaum, A. J. (1986). Giftedness: A psychosocial approach. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness* (pp. 21–52). New York: Cambridge University Press.

Tannenbaum, A. J. (1997, August). *The meaning and making of giftedness*. Paper presented at the World Conference of the World Council for Gifted and Talented Children, Seattle, WA.

Weber, P. (1999). Mental models and the identification of young gifted students: A tale of two boys. *Roeper Review, 21,* 183–188.