



INSTITUTE FOR HIGHER EDUCATION POLICY
1320 19th Street, NW, Suite 400
Washington, DC 20036

202 861 8223 **TELEPHONE**
202 861 9307 **FACSIMILE**
www.ihep.org **WEB**

THE BILL & MELINDA GATES FOUNDATION
P.O. Box 23350
Seattle, WA 98102

206 709 3100 **TELEPHONE**
www.gatesfoundation.org **WEB**



ISSUE BRIEF

Noncognitive Assessment
and College Success:
The Case of the Gates
Millennium Scholars

BY JENNIFER RAMSEY

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INSTITUTE FOR HIGHER EDUCATION POLICY
1320 19th Street, NW, Suite 400
Washington, DC 20036

202 861 8223 TELEPHONE
202 861 9307 FACSIMILE
www.ihep.org WEB

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Introduction

Given shifting demographic patterns in the United States and the importance of higher education to the 21st century workforce, policymakers and higher education officials are looking for ways to help underrepresented groups enroll in college and complete postsecondary credentials. Some decision makers have realized that traditional methods of assessing potential college students, particularly the reliance on standardized test scores in college admissions, may overlook strong applicants. Student groups currently underrepresented in higher education—including minorities, students from low-income families, and students whose parents did not attend college—may not perform especially well on traditional assessments but may still be able to succeed in college (Sedlacek 2004).

To address this continued divide in education, some colleges and universities are beginning to use noncognitive measures (psychological, social, and cultural factors) to supplement and

expand the information they have about their applicants. Tufts University recently implemented a system of noncognitive measures to assess applicants in conjunction with traditional test scores, resulting in greater numbers of underrepresented students accepted into the university (Jaschik 2007). Louisiana State Medical School, North Carolina State University, and Muhlenberg College also use noncognitive assessment in their admissions processes (Thomas, Kuncel, and Crede 2007). Noncognitive measures have been linked to positive student outcomes and, with further refinement, may prove to be an important factor in improving access and success for students who traditionally have been left out of the higher education system. ❧

Noncognitive Measures

Noncognitive measures evaluate such characteristics as adjustment, motivation, and student perceptions, which are not measurable using typical standardized tests (Sedlacek 2005). These measures are viewed as strong predictors of success for students who are not traditionally represented in higher education. These students often need to work during high school, which restricts time spent on academic and extracurricular pursuits, and they may also have parents with lower levels of education and less involvement in their children's educational plans. Noncognitive assessment helps account for the different experiences of such students rather than treating all students as though they come from similar environments.

Researchers have begun to understand the challenges of noncognitive assessment and what criteria are the best predictors for success. For example, Tapia and Marsh (2000) studied four factors related to success in mathematics: self-confidence, value, motivation, and enjoyment of math. The authors found that students' grades were correlated with the scores on the four factors. Students who were failing their math classes scored lowest on all four qualities, while those with higher grades in their math classes tended to have higher scores on the qualities. Similarly, House (1996) studied the effect of noncognitive measures in combination with academic background as a predictor of grade performance and academic persistence. He found that, while academic background was certainly a positive factor in the two outcomes, his noncognitive

measures of achievement expectancies and academic self-concept were also significant predictors of student achievement. This was particularly true of specific college courses, such as mathematics, chemistry, and general psychology.

Motivation is another important factor in student success. A student who expects to succeed and works hard to reach a goal is more likely than a less motivated student to reach that goal. Colquitt, LePine, and Noe (2000) found that, while cognitive factors influence training effectiveness, noncognitive factors such as personal involvement, intrinsic motivation, and commitment contribute to strengthened training outcomes. This finding reinforces the argument that motivation influences outcomes in learning situations.

These findings may help shrink the college access gap for underrepresented students. However, some studies suggest that all students, regardless of background, adjust to college in similar ways. In these studies, the relationships between particular noncognitive measures and student outcomes were found to be the same for all groups studied. For example, researchers found that the support and encouragement of parents was a factor in promoting academic persistence for both Black and White college students. Similarly, the sense of existing prejudice on campus negatively affected both groups, though the effect was much stronger for Black students (Cabrera et al. 1999). Another study found that high school grade point average (GPA) was the most powerful single predictor for fall semester GPA for all student groups, while noncognitive characteristics were more strongly associated with second semester GPA (Ting and Robinson 1998). These studies indicate that noncognitive assessments may assist in the selection of a more diverse group of students, but these measures are not the sole predictors of college outcomes for underrepresented groups.

Some higher education officials express concern that noncognitive measures may become just another “test” that affluent students can be taught to pass. Students could be coached to respond to questions in ways that demonstrate a desired personal characteristic even if they do not actually possess

that quality. A number of recent news articles have highlighted the efforts of wealthier students to craft the “perfect” college essay, which is one format through which noncognitive measures may be assessed (Berger 2007; Schworm 2008). Similarly, in reference letters, teachers may reflect what they believe the colleges want to hear and not necessarily the student’s true strengths and challenges, which would make noncognitive measures derived from such questions less valid.

Despite some mixed results from the research and mixed reactions to the use of noncognitive measures, this alternative method of assessment is of growing interest to college officials as they search for ways to diversify student demographics and provide access to underrepresented groups. One way to better understand how such measures can prove effective is to examine their use in a specific context. Since its inception, the Gates Millennium Scholars (GMS) program has used noncognitive criteria to select students who demonstrate great promise for academic success and leadership ability. In the few years since GMS began, the noncognitive measures used have shown signs of being strong predictors of student success. 

The Gates Millennium Scholars

The Bill & Melinda Gates Foundation established the GMS program in 1999 with an initial grant of \$1 billion. The goal of the program is to offer high-achieving African American, American Indian/Alaska Native, Hispanic American, and Asian/Pacific Islander American students with demonstrated financial need the opportunity to earn a bachelor's degree at the institution of their choice. The program provides a last-dollar scholarship, which entitles recipients, known as Scholars, to full funding of tuition, room, and board after deducting other grants and scholarships. Scholars are not required to accept loans or work-study as part of their financial aid package. For students majoring in education, engineering, library science, mathematics, public health, and the sciences, additional funding for graduate education is also available. Since 1999, more than 11,000 students have been selected to receive this award.

Potential Scholars must be eligible for a federal Pell Grant and have at least a 3.3 high school GPA. However, the GMS program places particular emphasis on selecting applicants who score high on measures of noncognitive ability. The program uses the Noncognitive Questionnaire (NCQ) to assess applicants. This questionnaire includes eight highly tested measures that have been shown to predict successful outcomes for minority students (Fuentes and Sedlacek 1994; Fuentes, Sedlacek, and Liu 1993; Sedlacek 1982; Woods and Sedlacek 1988).

The eight categories assessed by the NCQ are as follows:

1. Positive self-concept
2. Realistic self-appraisal
3. Ability to understand and handle racism
4. Preference for long-term goals rather than immediate needs
5. Availability of a strong support person
6. Successful leadership experience
7. Demonstrated community service
8. Knowledge acquired in a field

TABLE 1

Sample Statements and Questions from the Noncognitive Questionnaire and the Corresponding Noncognitive Measures

VARIABLE MEASURED	SAMPLE STATEMENTS
Positive self-concept or confidence	I want a chance to prove myself academically. If tutoring is available at no cost, I will attend regularly.
Realistic self-appraisal	I expect to have a harder time than most. I am as skilled academically as the average student.
Understands and deals with racism	I expect I will encounter racism in college.
Prefers long-range goals to short-term or immediate needs	Once I start something, I finish it. When I believe strongly in something, I act on it.
Availability of strong support person	My family always wanted me to go to college. If I run into problems concerning school, I have someone who would listen to me and help me.
Successful leadership experience	I am sometimes looked up to by others. In groups where I am comfortable, I am often looked to as a leader.
Community involvement	Please list offices held and/or groups belonged to in high school or your community.
Knowledge acquired in a field	Please list three goals that you have for yourself right now.

SOURCE: TRACEY AND SEDLACEK 1984

Applicants rank themselves on various scales and answer open-ended questions about their goals and accomplishments as they relate to the eight noncognitive measures (TABLE 1). Their answers provide insight into strengths and weaknesses that are likely to affect college success. Trained evaluators then assess the students' responses and tally a total score that reflects their noncognitive abilities.

Program administrators also assess academic rigor of applicants' high school curricula and their ability to explain their reason for applying for the scholarship through a written essay. This combination of assessments allows the GMS program to judge the academic potential of students who may demonstrate their abilities in ways other than traditional tests and grades. Approximately 1,000 students each year are selected to receive the scholarship on the basis of their overall scores. To ensure adequate representation of all racial and ethnic minority groups, Scholars are evaluated within their minority group rather than against the entire set of applicants.

The rationale for using nontraditional assessment methods in the GMS selection process is that they help identify underserved students who will be able to overcome the challenges

they may face while pursuing higher education. The process also aims to select students who are likely to become leaders in their communities, a stated goal of the GMS program. With demonstrated leadership and the will to overcome obstacles, Scholars can become role models for other members of their communities, as well as part of a more diverse population of future American leaders. 

Research on the GMS Program

As part of its effort to ensure best practices in its funded programs, The Bill & Melinda Gates Foundation has contracted with the National Opinion Research Center (NORC), housed at the University of Chicago, to conduct a longitudinal survey of Scholars at various intervals in their lives. The surveys also include responses from non-recipients—students who applied for the scholarship but were not selected. Academic researchers have used this data to construct a picture of outcomes and experiences for the Scholars. The results of the research inform the future of the GMS program and further the dialogue on how best to assess students' likelihood of succeeding in postsecondary education.

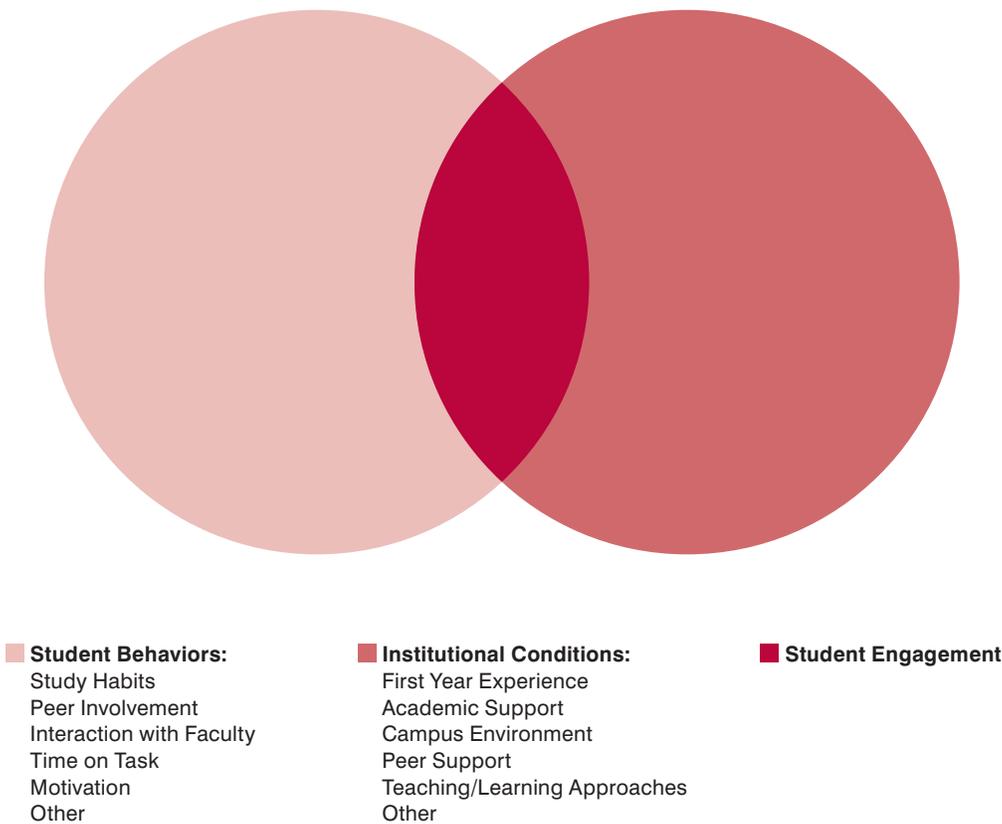
Several reports produced as part of the GMS research program examine the relationship between noncognitive measures and student outcomes. Some of the research looks at the noncognitive measures and their impact on specific Scholar outcomes, while other research demonstrates more generally the overall differences between Scholars and non-recipients, which may help reveal a relationship between higher noncognitive scores and success in college.

Noncognitive Measures and Specific Scholar Outcomes

One of the most basic descriptors of academic achievement in college is a student's GPA. Sedlacek and Sheu (2004) found that four of the noncognitive measures directly influenced the GPAs of undergraduate Scholars: positive self-concept, realistic self-appraisal, understanding and dealing with racism, and community involvement. However, for graduate Scholars, the only variable that significantly

FIGURE 1

What Matters for Student Success



SOURCE: ADAPTED FROM KUH ET AL. 2006

predicted GPA was realistic self-appraisal (Sedlacek and Sheu 2006a). For both non-recipients and Scholars, realistic self-appraisal also positively predicted time spent studying, which should positively affect academic achievement (Sedlacek and Sheu 2004).

Besides measuring student success in terms of academic achievement directly, researchers have looked at important aspects of college life that influence student outcomes. The whole college experience is affected by the student's own behaviors as well as conditions at the student's institution. In interviews, for example, Scholars cited internal motivation and the availability of a support person as reasons for their successful transition and persistence in college (Allen, Bonous-Hammarth, and Suh 2006). Other crucial factors include interaction with faculty, peer involvement, academic support, and a positive campus environment (FIGURE 1). A student who is actively engaged in the college community,

whether academically or socially, is more likely to invest in continued progress and achievement (Kuh et al. 2007).

Several noncognitive measures have been identified as directly related to higher levels of student engagement. For example, high scores on positive self-concept and prior leadership experience were linked to an increased likelihood that an undergraduate Scholar would hold a leadership position on campus. For graduate Scholars, the availability of a strong support person was also directly related to holding a campus leadership position. Undergraduate Scholars were also affected by the availability of a strong support person, but in a different manner. These students did not necessarily hold leadership positions on campus, but they were more actively involved in campus life or in the local community than students with lower scores on this measure (Sedlacek and Sheu 2006b).

TABLE 2

Noncognitive Measures and Their Associated Outcomes for Gates Millennium Scholars

NONCOGNITIVE VARIABLE	ASSOCIATED OUTCOMES
Positive self-concept or confidence	Higher GPA Campus leadership position Self-perception of leadership abilities
Realistic self-appraisal	More time spent studying Higher GPA
Understands and deals with racism	Higher GPA More likely to get involved in religious and cultural groups
Availability of strong support person	Involvement in leadership and community
Leadership experience	Involvement in leadership and community Self-perception of leadership abilities
Community involvement	Higher GPA Campus leadership position Self-perception of leadership abilities

SOURCE: SEDLACEK AND SHEU 2004, 2006A, 2006B

The research on the GMS program demonstrates a strong relationship between noncognitive measures and specific positive outcomes for Scholars, particularly in terms of academic and social engagement (**TABLE 2**). Involvement in academic or community activities is affected by more than half of the NCQ measures. Half of the measures on the NCQ also demonstrate a direct relationship with a student’s GPA. These findings help validate the argument that the NCQ is a useful tool for selecting students who can succeed in college.

Overall Outcomes for Scholars

While the noncognitive measures can be linked to specific student outcomes, it is also important to look at the overall outcomes for Scholars and whether they are related to a higher overall noncognitive score. Several of the research reports identify differences in outcomes between Scholars and non-recipients. As Scholars are chosen primarily because of their higher noncognitive scores, it is possible to infer a link between the total noncognitive score and positive student outcomes.

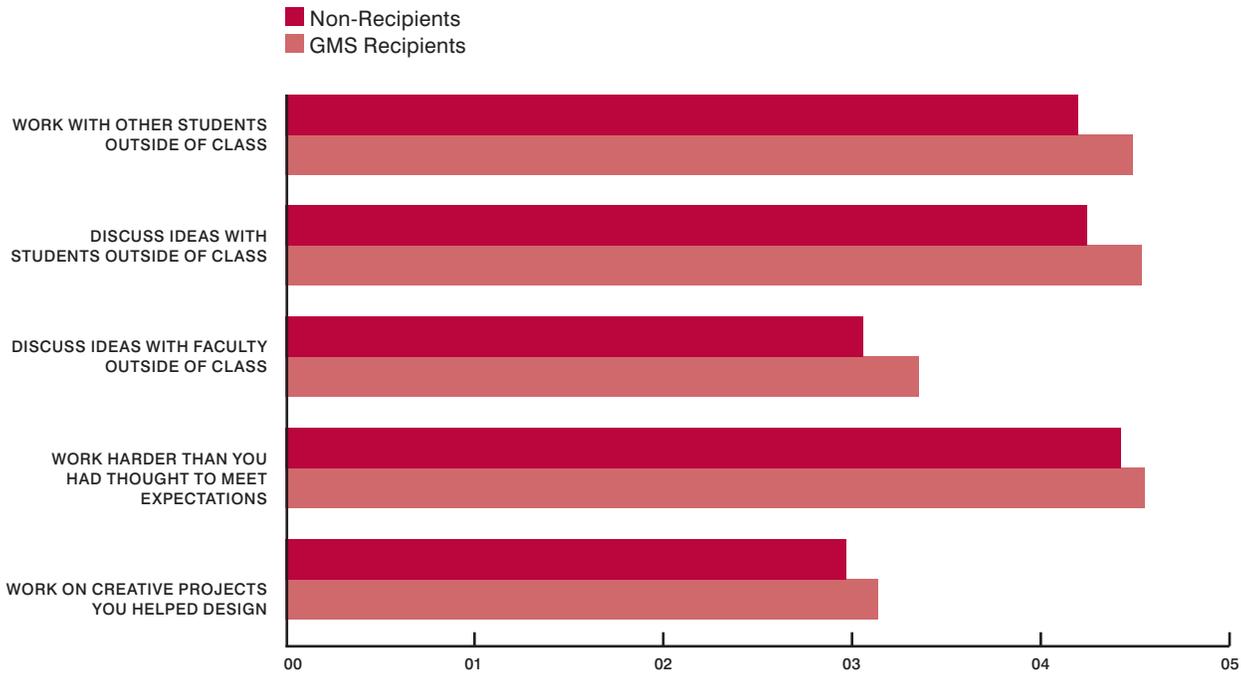
However, it is important to note the limitations in assuming that all student outcomes result from the GMS selection

process without accounting for the financial aspect of the program. Receiving a last-dollar scholarship allows Scholars to work fewer hours to pay for their education, which gives them more time for their studies and to become involved in campus and community groups. Scholars are more likely than non-recipients to attend highly selective—and often more expensive—colleges, and attending such institutions is generally associated with improved academic outcomes. For these reasons, some positive outcomes for GMS Scholars may be more accurately attributed to the financial aspect of the program than to the noncognitive scores.

Other outcomes, however, do seem to demonstrate that the higher noncognitive scores of Scholars are connected with positive outcomes. Overall, Scholars in the first three cohorts had greater academic and community engagement than did non-recipients (**FIGURE 2**). They were more likely to discuss academic topics and work on projects outside of class time, and they felt more involved in their projects and interactions with faculty (Erisman and McSwain 2006). Hu (2008a) found that this greater engagement was positively associated with

FIGURE 2

Average Academic Engagement Scores for Gates Millennium Scholars and Non-Recipients Entering College in 2000, 2001, or 2002



NOTE: NON-RECIPIENTS ARE STUDENTS WHO APPLIED FOR THE GATES MILLENNIUM SCHOLARSHIP BUT DID NOT RECEIVE IT. SCORES WERE CALCULATED ON A CONTINUOUS SCALE FROM 5 (HIGH) TO 0 (LOW).
SOURCE: ST. JOHN AND HU 2005

the overall noncognitive score. Scholars were more likely than non-recipients to get involved in religious and cultural groups, activities that are connected to stronger community involvement and a student’s ability to understand and deal with racism. Scholars were also more likely to take advantage of tutoring sessions, which may contribute to their higher GPAs (Erismann and McSwain 2006; Long, Bert and Boatman 2008). Among those who had completed their college education, Scholars demonstrated a greater sense of civic responsibility than did non-recipients (Hu 2008b). This finding demonstrates that the GMS process succeeds in selecting students who exhibit and will continue to exhibit engagement.

The graduation rate of Scholars was higher than that of non-recipients even after accounting for institutional selectivity. Depending on the selectivity of the institution, Scholars’ degree attainment rate was 4 to 6 percent higher than that of non-recipients (Melguizo 2008). Furthermore, compared with non-recipients, Scholars were 64 percent more likely to enter a graduate program than to not even apply, suggesting a greater level of commitment and long-term goal setting (Meyers et al. 2008).

In the growing body of research, Scholars have been shown to demonstrate positive overall outcomes compared with similar students. Scholars are selected not just for academic achievement but for other characteristics linked to college success, which may be influencing the positive outcomes. Continuing to follow these students through college and graduate school and into the workforce will allow GMS program administrators to better understand the reasons behind the positive outcomes and to ensure that they are providing the best possible support for Scholars. This work will also add to the body of research that calls for more effective assessment methods for students from underrepresented groups. 

Future Research

While the argument for using noncognitive measures to assess student potential is not new, the complex interactions among student characteristics and the student populations studied demonstrate a need for more research. The NCQ has been tested on varied populations, but the sample sizes were often small, and different measures were often found to be related to success for different populations. Increased testing and refinement of the various assessment methods would allow proponents to make a stronger case for using them for college admissions. Key research questions include these:

- **Which noncognitive measures are most important in predicting success for each student subgroup?**

Much of the research that examines the data on noncognitive measures based on gender or race demonstrates some similarities and some differences in predictors of success. Similarly, the mean overall noncognitive score for each student subgroup among the GMS applicants is regularly and significantly different. Scaling up the research would allow for more definitive answers regarding the most important attributes for different groups. In this way, the noncognitive assessment could be better tailored to emphasize the criteria most important to individuals in different subgroups.

- **Could other groups besides underrepresented students benefit from the use of noncognitive assessment in college admissions?**

While noncognitive assessment has been shown to be effective in assessing minority students, other student

groups might benefit from such assessment as well. One study of student athletes found that traditional assessments had no correlation with freshman GPA, but three of the NCQ measures did. The authors concluded that it may be best to consider athletes as a unique culture that encounters difficulties in navigating the college system (Sedlacek and Adams-Gaston 1989). Are there other populations that could benefit from the use of noncognitive assessment?

- **Does using noncognitive assessment to admit lower-achieving students show the same success as it does for high-achieving students?**

Research shows a positive relationship between noncognitive measures and success for students, such as the Gates Millennium Scholars, who already exhibit success on traditional standards of academic achievement (e.g. GPA, test scores). It would be interesting to see if the same links to success are found for lower-achieving students. The Bill & Melinda Gates

Foundation has a unique opportunity to conduct this research using its Washington State Achievers and DC Achievers programs. These programs admit students from a range of academic achievement levels, with selection based solely on financial need and the noncognitive assessment.

- **What are the differences between noncognitive measures and outcomes for graduate and undergraduate students?**

A number of differences were discovered in the relationship between noncognitive measures and outcomes for students at different levels in their postsecondary career (Sedlacek and Sheu 2004; 2006b). How might this finding affect the selection of candidates for graduate school versus undergraduate admissions? Are certain measures more important earlier and others later in college? Is this difference related to age and experience more than level of study? If so, can these findings be used to better assess adult learners?

- **What are possible explanations for unexpected relationships between certain noncognitive measures and student outcomes?**

Researchers expected that the greater the Scholar's positive self-concept, the more likely he or she would be to enter into one of the science, technology, engineering, and mathematics (STEM) fields, because many students believe these fields are very difficult (The Institution of Engineering

and Technology 2008). However, the reverse occurred (Trent, Owens-Nicholson, and George 2006). With the growing awareness that minority students are underrepresented in the STEM fields and the interest of the GMS program in providing access to those fields, it is important to delve further into reasons why self-aware and confident students are less likely to enter those fields; for example, it may be a lack of cultural identification or identification of value to their communities.

- **How can educators and other mentors help students develop the noncognitive characteristics associated with academic success?**

While the GMS program identifies students who already exhibit strong noncognitive abilities and characteristics, other students could benefit from higher education. How does a person develop these characteristics? Do certain events or activities strengthen them? Do they change much over time as a person continues to face new situations, or is there a point at which they plateau? The noncognitive characteristics assessed by the GMS program demonstrate a relationship with positive student outcomes in college, and teachers and administrators can use that knowledge to provide support and services to help develop the college potential of all their students. 

Conclusion

Using noncognitive assessment methods is one way institutions can more effectively assess the strengths of students who differ from traditional college students. No two students have the same experiences or the same background, so it is natural to assess their strengths and abilities in different ways.

The Gates Millennium Scholars program is one example of a new effort to look deeper into students' lives and experiences and assess their developmental potential, particularly as it affects the likelihood of postsecondary success. By using the NCQ to assess eight indicators, the GMS program selects students who demonstrate signs of being able to succeed in college. Evaluations of the program demonstrate links between particular noncognitive measures and student outcomes. Research also shows positive outcomes for Scholars versus students who applied for but did not receive the scholarship. Since Scholars are selected because of their higher noncognitive scores, it is possible to link their positive outcomes with the selection process and the use of noncognitive measures.

The use of noncognitive measures in college admissions is relatively new, and higher education officials need additional research to understand the effectiveness and feasibility of using such measures for underrepresented groups in higher education. However, traditional assessment methods overlook the challenges many students face in gaining access to college, thus perpetuating the cycle of inequality. The use of noncognitive measures is just one approach to the problem of inequality in higher education, but the GMS program is a well-researched effort that demonstrates some success and offers hope for the future. ❧



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