


Welcome!



Inside Graduate Admissions: Merit, Diversity, & Designing for Inclusive Excellence

4 April 2018

University of Washington

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Dedicated to
Dr. Martin Luther King, Jr.
and all those striving to
embody his legacy of
justice & love.

Plan for the day

12:00-1:30: Overview of Key Research, Evidence, Cases, and Cautionary Tales

1:30-1:45: Break

1:45-3:15: Department-level Change Work

Guided work in small groups to address questions and adaptations relating to:

- rubrics,
- interview questions and process,
- personal statement questions,
- admissions committee trainings and prep,

3:15-4:00: Remaining Challenges and Action Steps

Share out what's working for you and why

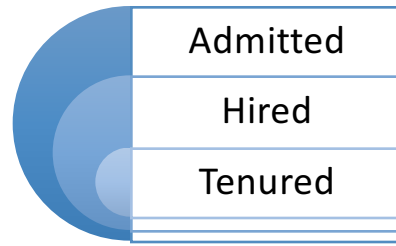
Common evaluation & selection practices

Evaluation permeates academia.

Production & reception of academic work

Recognition of scholars

Status of academic entities (universities,
programs, journals, etc.)



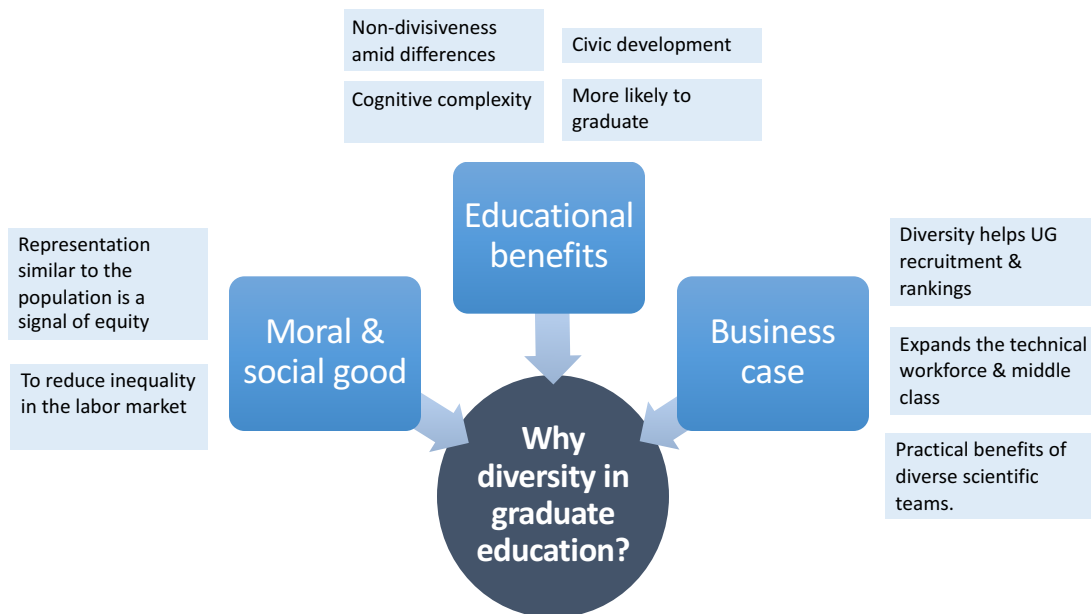
Ad hoc evaluation

- Responding to email inquiries from prospective students
- Reviewing letters of recommendation
- Reviewing writing samples
- Hiring postdoctoral fellows

Formal evaluation

- Peer review
- Book reviews
- Writing letters of recommendation
- Promotion/ tenure review
- Annual awards, grant & fellowship funding panels

Review of student applications is a hybrid of ad hoc & formal evaluation.



Practical benefits of diverse scientific teams.

Research Cited More

- Freeman & Huang, 2014

Better Problem Solving

- Phillips et al. 2008
- Page, 2007

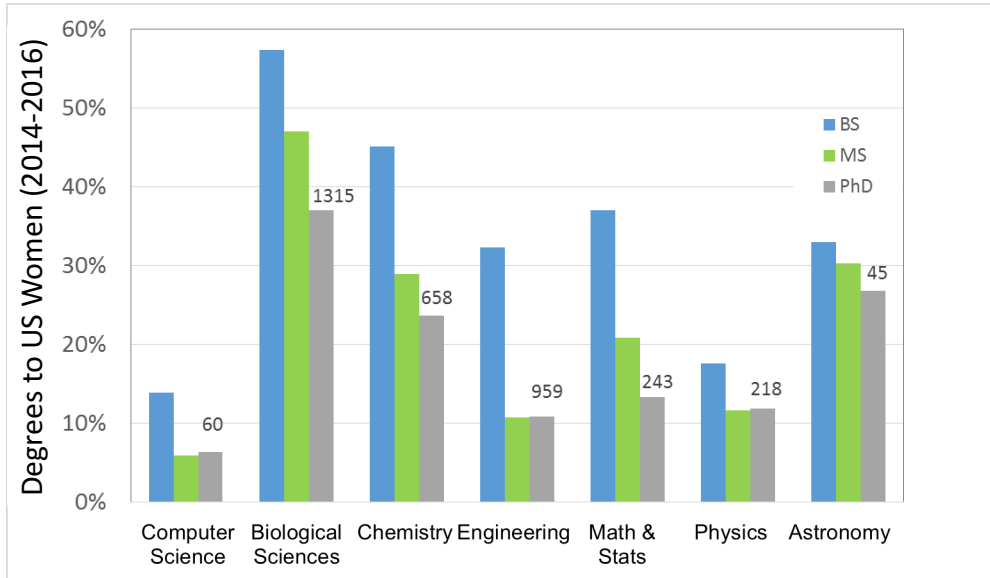
Better Ideas

- De VaanStark & Vedres, 2011
- Burt, 2004

Why focus on the diversity of large, selective graduate programs?

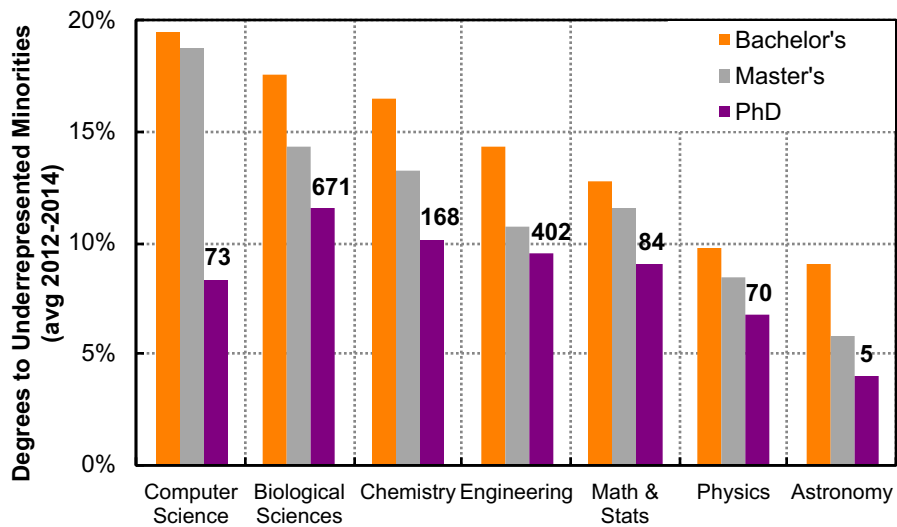
- **Opportunity to lead:** When powerful organizations within a system make changes, others are likely to follow.
- **Craft the future of science:** They create the pools from which the next generation of faculty & scientific leaders are selected.
- **Reduce inequality:** Gender and racial disparities in doctoral enrollment & degree completion are most profound in large, selective programs.

State of STEM



Credit: L. Owens; IPEDS Completion Survey

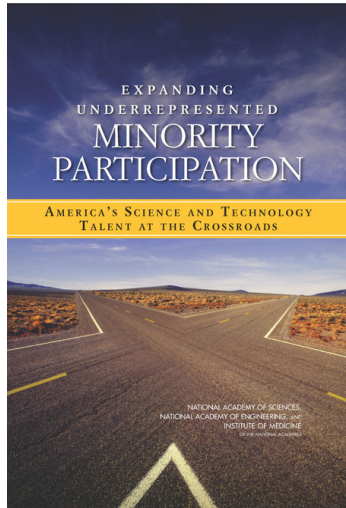
State of STEM



Source: National Center for Education Statistics and APS

Credit: APS/Source: IPEDS Completion Survey

What can be done?



Top Priority Actions

- 1) Increase undergraduate retention and completion via strong academic, social, and financial support.
- 2) Teacher prep, college prep programs, and transition to graduate study.

Legal Landscape

US Supreme Court on Affirmative Action



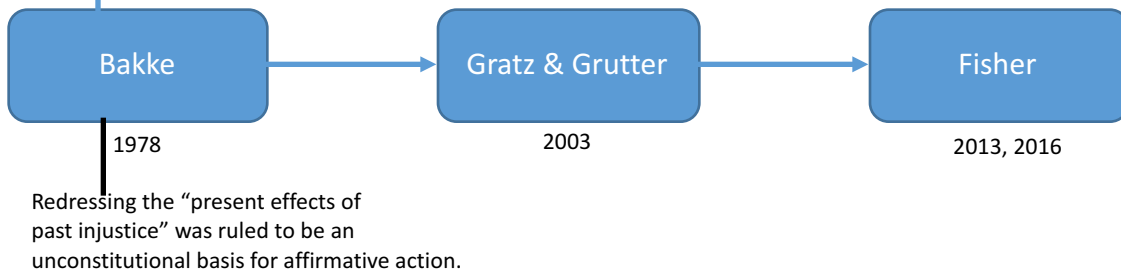
US Supreme Court on Affirmative Action

Racial quotas are unconstitutional.
Race is a permissible “plus factor,” BUT
policies must be “narrowly tailored” to achieve *diversity*,
which is the only “compelling state interest” for affirmative action.



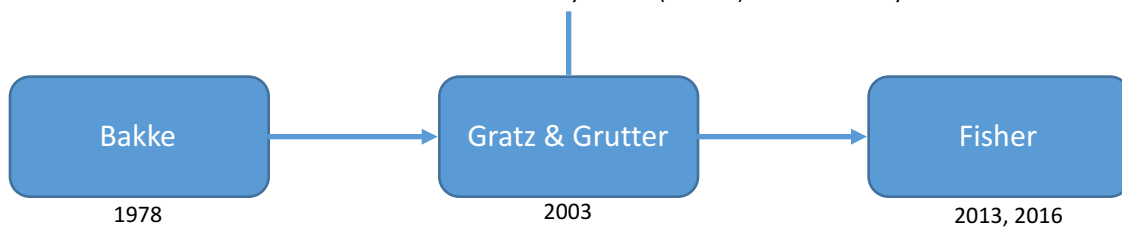
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US Supreme Court on Affirmative Action

Predetermined points for race/ethnicity unconstitutional (Gratz), BUT
race *can* be considered as one of many factors (Grutter) in a holistic way.



US Supreme Court on Affirmative Action

Colleges must offer a “reasoned, principled explanation” for diversity.
 Race-conscious admissions must
 ...be narrowly tailored to achieve diversity goals.
 ...withstand strict scrutiny (i.e., demonstrate that diversity can’t be achieved through means that don’t require the consideration of race).



8 states have banned affirmative action.

BALLOT INITIATIVES

- Arizona
- California
- Michigan
- Nebraska
- Oklahoma
- Washington

LEGISLATURE / GOVERNOR

- New Hampshire
- Florida

INSTITUTION-SPECIFIC

- University of Georgia

Elsewhere, key principles for practice from *Bakke* stand.

- Reserving seats or shares of seats for underrepresented students is not permissible.
- Reviewers should use a common evaluation process for all applicants.
- Race should be just one of several individual characteristics assessed as a plus factor.
- Every applicant should be evaluated as an individual, not assumed to represent a broader identity category.
- Programs should not single out specific racial/ethnic groups, but consider contributions that all groups make to diversity.

Source: UCLA Civil Rights Project, 2002

Discuss:

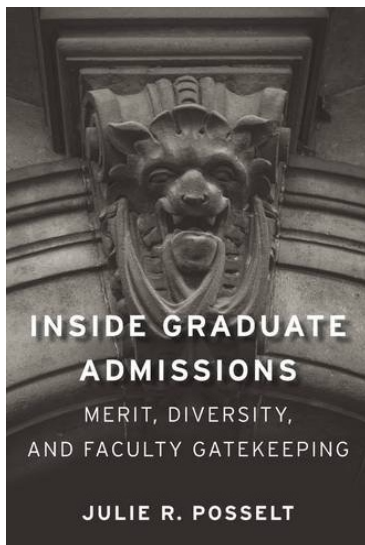
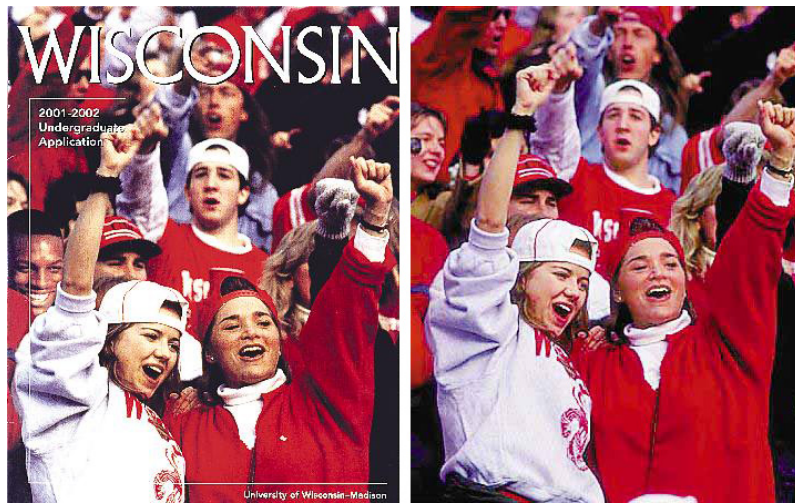
In what ways is it legal for admissions committees to consider race?

- Take 5 minutes to discuss this question at your table.
- Is everyone is on the same page?

Legal Landscape: Takeaways

- Under specific conditions, race-conscious admissions policy is constitutional outside the states mentioned.
- Parameters are tightening. Universities & graduate programs must seek diversity in multiple ways, and have a “reasoned, principled explanation” for diversity’s value in their context.
- Weighing race as an admissions consideration is different than accounting for how dynamics of race in America may shape...
 - ...applicant distributions of grades, test scores, and institutional affiliations
 - ...the viewpoints that applicants are likely to contribute.
- Admissions committees need not be color-mute, & will be best protected legally if admissions policy is defined. Ad hoc policy is hard to defend.

Common admissions practices in large, highly selective PhD programs



Harvard University Press, 2016

- *Research Questions:*
 - How do faculty individually judge & collectively select applicants to highly ranked Ph.D. programs?
 - What assumptions about merit guide faculty judgment
 - How do disciplinary norms shape faculty judgment?
- Comparative ethnographic case study
- 10 programs in 3 public & private universities
 - 85 interviews with professors & a few graduate students
 - 22 hours of admissions meeting observations in six of the programs

Programs Studied

	Humanities	Social Sciences	Natural Sciences
High Consensus	Philosophy (2 programs)	Economics	Physics
Moderate Consensus	Classics	Sociology	Astrophysics
Low Consensus	Linguistics	Political Science	Biology

Evaluative cultures explain apparent tensions between definitions of merit & valuing diversity.

- *Preference for specific criteria* was rooted in beliefs about what they signal. Those beliefs relate to their roles as scholars in highly ranked programs.
- *Preference for a process that is efficient and collegial.* Goals: Quantify quality & minimize conflict.
- In high-consensus fields like physics, *shared disciplinary norms* shaped working definitions of “merit”, ideas about intelligence & what the admissions process should look like.
- In low-consensus fields like political science and linguistics, *individual preferences* were as important as shared preferences in high-consensus fields and reflected patterns of homophily (“love of the same”).
- *Ambivalence about organizational change*, especially reforms related to diversity and equity.

Two-tiered review is used in most places.

Initial screening	
Conceptualizing merit	Conventional achievers with low perceived risk of attrition
Important criteria	"Numbers" in context of undergraduate prestige & curriculum rigor
Relationship of merit & diversity	Standard of merit may be in tension with racial/gender diversity aims.

Two-tiered review is used in most places.

	Initial screening	Later rounds of review
Conceptualizing merit	Conventional achievers with low perceived risk of attrition	Future of the discipline
Important criteria	"Numbers" in context of undergraduate prestige & curriculum rigor	Experience with and dispositions for research; Unique perspective; research interests align
Relationship of merit & diversity	Standard of merit may be in tension with racial/gender diversity aims.	Diversity is a component of merit.

Why do faculty rely on GRE scores?

Theory of cultural & evaluative scripts¹ was used to interpret the data

Def: Stories that people tell themselves to justify taken for granted behavior

Faculty associate GRE scores and grades (conditional on curriculum rigor and institutional prestige of where the grades were earned) **with**

Intelligence, which they associate with

Belonging in an elite intellectual community

Risk profile

1 Goffman, 1959; Lamont, 2009

GRE Scores & Intelligence

In interviews, 50% of the sample volunteered some idea about intelligence when asked what GRE scores signal

(e.g., “sheer intellectual horsepower”, “native intelligence”)

In meetings, >50% of GRE mentions were what I classified as smart talk.



“Someone who does that well on the GRE is unlikely to be lame- brained. They are likely to be smart.” (philosophy)

“Freaking genius” (political science)



“I question she has what it takes.”

“[He was] from a different planet and we were confident that this person was not going to be one of us. He’s not going to be a full member of the scientific community.” (biology)

Risk Aversion

- Risk aversion was understood to be an obligation & luxury
- But there were examples of challenging the risk aversion script.

Example 1 of the risk aversion script and a challenge to it:

Prof. Bob: "Her GREs [of 690, 740, & 4.5] present a risk for her not succeeding" particularly because she "didn't attend a top-rated university."

Prof. Lynn: "She may have undershot... This is an area that can be gendered... We have to be very careful here."

Prof. Bob: "All in all, it gives me doubt."

[Student ultimately waitlisted]

PHILOSOPHY

Astrophysics committee

	Prabhat	Jeff	Juan	Wayne	Chris
Title	Assoc Prof	Assoc Prof	Assoc Prof	Asst Prof	Ph.D. candidate
Institutional affiliations	Ivy	Ivy	Ivy	Big Ten	Big Ten
Born	Int'l	Domestic	Int'l	Domestic	Domestic

35

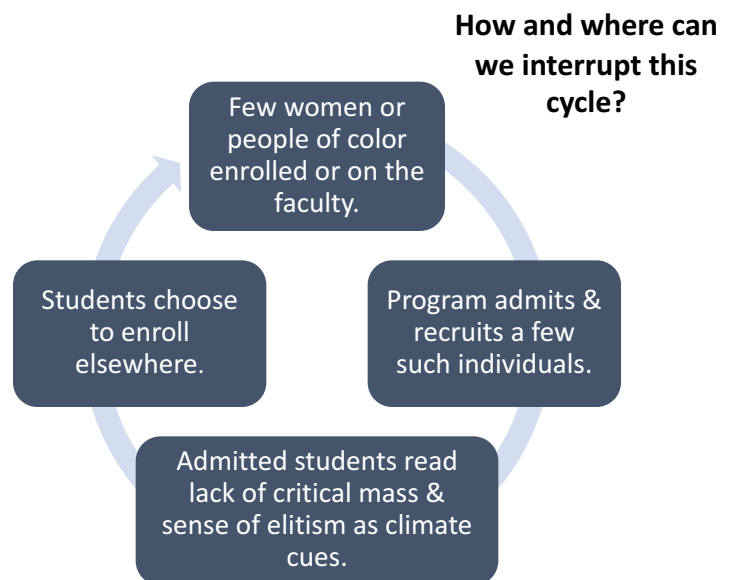
PUT HOLISTIC REVIEW IN CONTEXT

- Holistic review is just one part of improving selection
- Useful for identifying talent from many underrepresented groups
 - Students from liberal arts colleges and less selective universities
 - Non-traditionally aged students
 - Students switching fields
 - Lower SES and/or first-generation college students
 - People of color
 - Women of all backgrounds

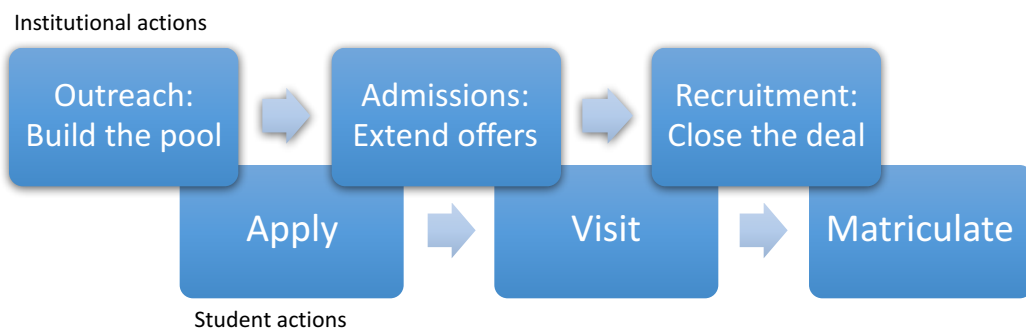
Admissions in context

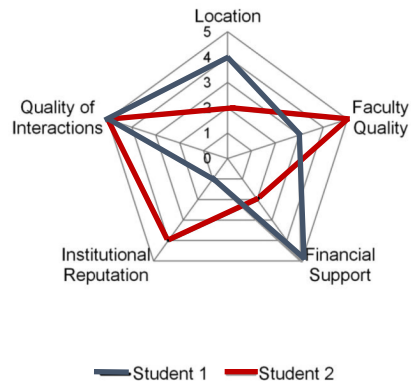
We need to think systemically when we think about improving admissions.

Admissions should be one prong in a multidimensional set of efforts.



Recruitment

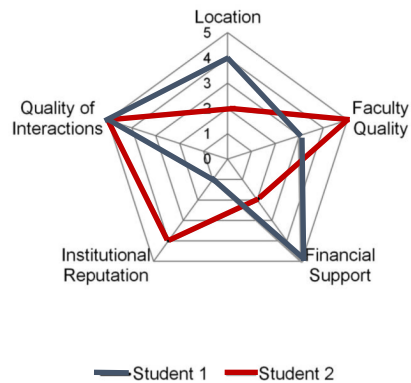




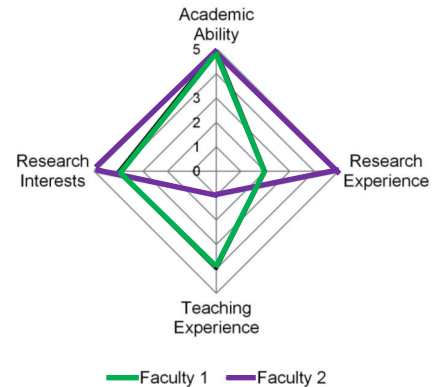
Importance placed on various institutional characteristics by two hypothetical students.

Consider: Which one will be easiest to attract, if the students were considering your program?

Bersola et al. (2014).



Importance placed on various institutional characteristics by two hypothetical students.
Consider: Which one will be easiest to attract, if the students were considering your program?



Importance placed on various student characteristics by two hypothetical professors.
Consider: Which one would be most admissible to your program?

Bersola et al. (2014).

Bersola et al. (2014).

FACULTY MAY MISJUDGE WHAT IS IMPORTANT TO STUDENTS' MATRICULATION DECISIONS.

What faculty thought

- Financial aid is paramount

What non-matriculants said

- 77% of non-matriculants said they would have still enrolled at their current institution if Western University had matched their current institution's package.

Bersola et al. (2014).

FACULTY MAY MISJUDGE WHAT IS IMPORTANT TO STUDENTS' MATRICULATION DECISIONS.

What faculty thought

- 85% rated their yield activities as "strong" or "above average."

What non-matriculants said

- When asked "which institution gave a more favorable impression," 60% named their current institution, 27% rated them the same, and only 13% rated Western University higher.

Recruitment strategies used by high-diversity STEM programs in research universities

Psychology

- Website revamp
- Creation of a diversity-focused curriculum track
- Coffee hour during campus visit weekend for “straight talk” about diversity in the department.
- Beware the risk of bait & switch

Slay, Posselt, & Reyes (2017)

Applied physics

- Individualized curriculum
- Prominent role of administrative staff in all facets of program life.
 - “Eyes & ears of the department”
 - Family-like roles with prospective & current students
 - Cultural translators to aid faculty in serving students across race & gender
- Climate as a “competitive advantage” in the admissions process.

Posselt, Reyes, Slay, Kamimura, & Porter (2017)

Domains of recruitment work

DISCUSS:

Which of these are strengths & weaknesses in your department?
How could you shore up weaknesses?

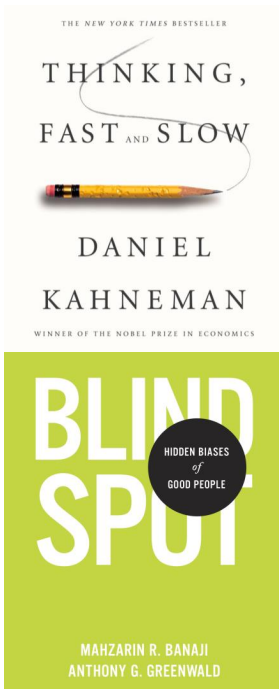
- Online messaging
- Programming & points of connection for students
- Financial aid
- Faculty composition
- Faculty responsiveness & one-on-one contact
- Student ambassadors
- Climate for diversity

Problems with the typical approach

Blind spots

Limited efficacy

Overreliance on metrics without considering context



Blind spots in faculty assumptions.

- Some assumptions are highly gendered and racialized.
- Assumptions about risk are informal and subject to biases. For example,
 - Faculty place undue confidence in their own ability to predict who will be successful.
 - It's difficult to reliably predict Ph.D. completion for populations who rarely enroll (i.e., problem of small N)
- Student outcomes result from what they bring to the table AND from the educational experience & climate we provide (Lovitts & Nelson, 2000).

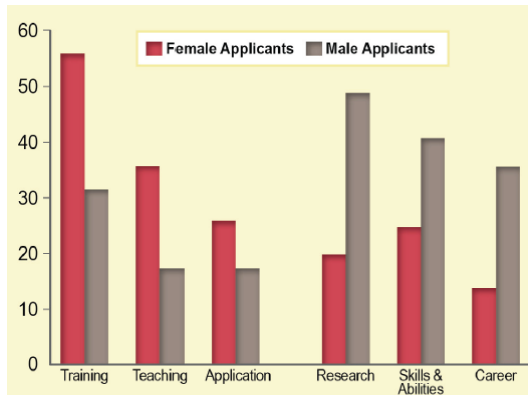
Implicit bias

Milkman et al.: “What comes before”

- Field experiment compared faculty responses to email inquiries from prospective graduate students.
- Emails sent to 600 professors, identical in all ways except the name on the bottom.
- Professors responded significantly less often to prospective students whose names suggested they were Black, Latino, from Chinese, Indian, and/or female.
- And when they did respond, they took significantly longer.
- Effects strongest in private universities.

White Male Applicants	Female and URM Applicants
→ Judged based on potential	→ Judged based on proven ability
→ Evaluators focus on qualifications at the expense of shortcomings	→ Evaluators focus on shortcomings at the expense of qualifications
→ Evaluators let unique qualities unlinked to competencies override flaws	→ Evaluators ignore unique qualities that are unlinked to competencies
→ Evaluators select candidates who have flaws but are expected to succeed	→ Evaluators select candidates who are guaranteed not to fail
→ Evaluators happy with a “good fit”	→ Evaluators need a “perfect fit”
→ Selected based on how they have performed (absolute)	→ Selected based on performance of others in their group (relative)
→ Evaluators value homogeneity	→ Evaluators ignore the “value-added” of diversity
Adapted from a workshop developed by the Cornell University ADVANCE Center	

Biases in Letters of Recommendation



Trix and Psenka (2003) found that compared with letters written for men, letters written about women were:

- Shorter
- more likely to lack basic features, such as how they knew the applicant
- concrete references about the applicant's record
- evaluative comments about the applicant's traits or accomplishments.
- Less likely to be aligned with research record and ability.

Biases in Letters of Recommendation

Common subtleties that unintentionally influence readers

- Using **first names** for women or minority faculty and titles for men
- **Gendered adjectives:** *"Dr. Sarah Gray is a compassionate educator."* vs. *"Dr. Joel Gray has been very successful with his students."*
- **Doubt Raisers:** *"although her publications are not numerous"* or *"while not the best student I have had s/he..."*
- **Faint Praise:** *"S/he worked hard on projects that s/he was assigned."* or *"S/he has never had temper tantrums."*
- **Stereotypes:** *"She is not overly emotional"* or *"She is extremely productive, especially as someone who attended inner city schools and a large state university."*

Adapted from Leigh ADVANCE Best Practices for Reading and Writing Letters of Recommendation

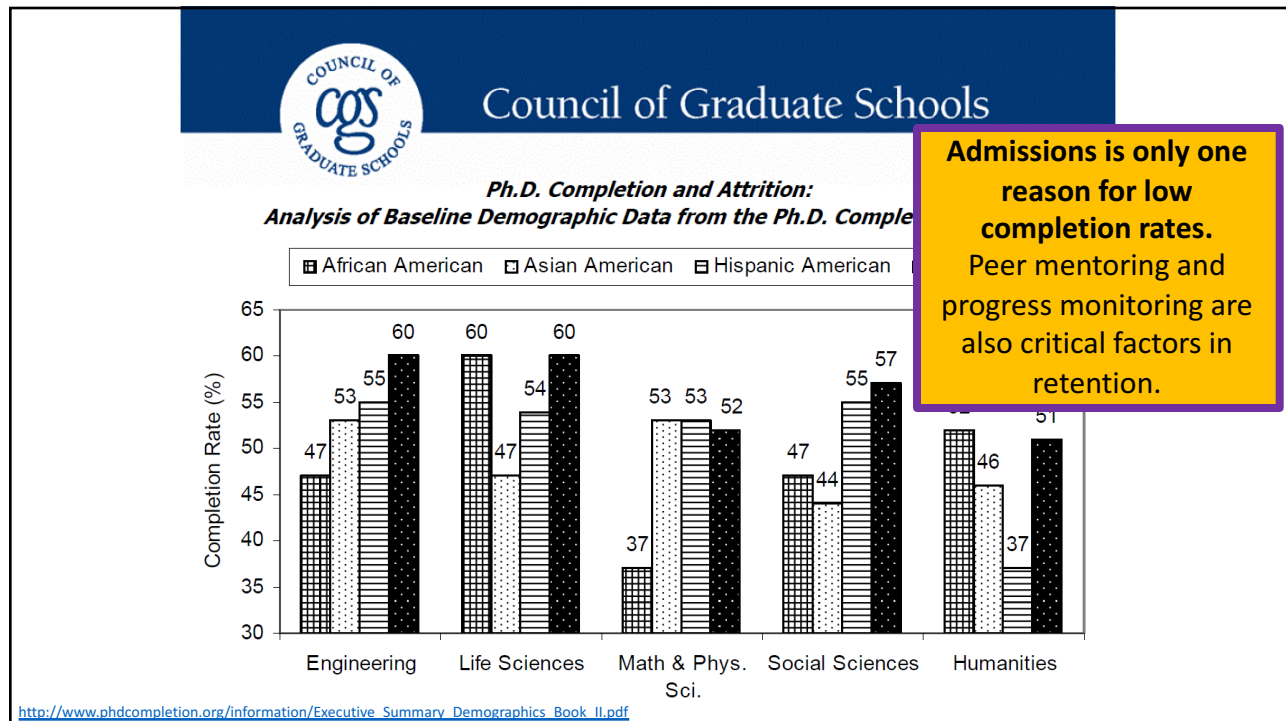
Check your own implicit bias

<http://bit.ly/hri-implicit>

Limited Efficacy of
Traditional Process

It doesn't work
much better than
this in predicting
long term success.

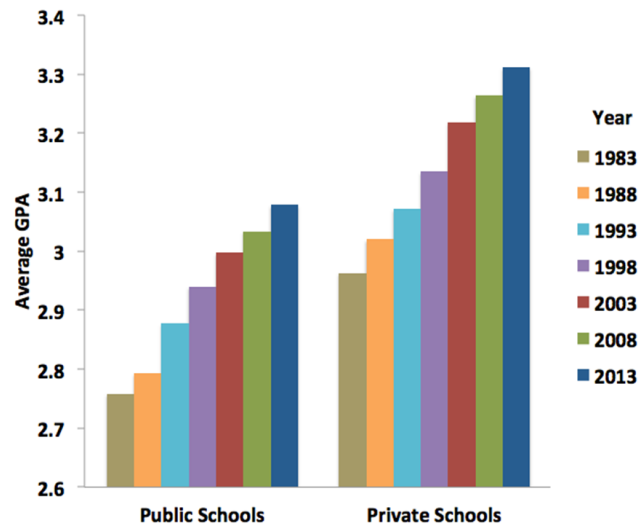




Overreliance
on undergraduate GPA
and test scores
without considering
context & error.



Patterns of grade inflation undermine opportunities for minority participation.



GradeInflation.com

Most STEM URM Students Attend Public Colleges (Blue=Private)

URM Engineering #BA/BS	Rank	URM Physical Sciences #BA/BS
University of Florida (240/yr)	1	Florida International University (85/yr)
Florida International University	2	Xavier University of Louisiana
Texas A & M University-College Station	3	The University of Texas at Austin
University of Central Florida	4	University of California-Santa Barbara
Georgia Institute of Technology-Main Campus	5	Texas A & M University-College Station
California State Polytechnic University-Pomona	6	The University of Texas at El Paso
The University of Texas at El Paso	7	University of California-Los Angeles
The University of Texas at Austin	8	University of Florida
North Carolina A & T State University	9	Spelman College
The University of Texas-Pan American	10	University of California-Irvine
Cal Polytechnic State University-San Luis Obispo	11	University of North Carolina at Chapel Hill
The University of Texas at San Antonio	12	University of California-Santa Cruz
Arizona State University-Tempe	13	University of Arizona
University of California-San Diego	14	University of New Mexico-Main Campus
University of Houston	15	Florida State University
San Diego State University	16	Georgia State University
Morgan State University	17	Jackson State University
Prairie View A & M University	18	The University of Texas at San Antonio
Alabama A & M University	19	Columbia University
North Carolina State University at Raleigh	20	University of Memphis
Southern University and A & M College	21	CUNY City College
Howard University	22	CUNY Graduate School and University Center
Tuskegee University	23	Savannah State University
University of Maryland-College Park	24	Alabama A & M University
University of South Florida-Main Campus	25	Georgia Southern University
Virginia Tech (38/yr)	26	Tennessee State University (15/yr)

Frequent misuse of GRE scores.

- ETS's document, "Guide to Use of Scores" is not followed (or often even known of)
- Significant race and gender differences in scores
- Scores' correlations with success are questionable

Pop Quiz:

With all else equal, which folder do you admit?

Folder A

GRE-Q: 740 (80%)

Folder B

GRE-Q: 800 (perfect)

From ETS Guide to Use of Scores:

It is an inexact measure; **only score differences that exceed the standard error of measurement of a given score can serve as a reliable indication of real differences** in applicants' academic knowledge and developed abilities.”

CONSIDER THE STANDARD ERROR OF MEASUREMENT

~60 points on old GRE scale (200-800).
(3pts on new scale 130-170).

740 = 800 = perfect!

<http://www.ets.org/gre/institutions/scores/guidelines/>

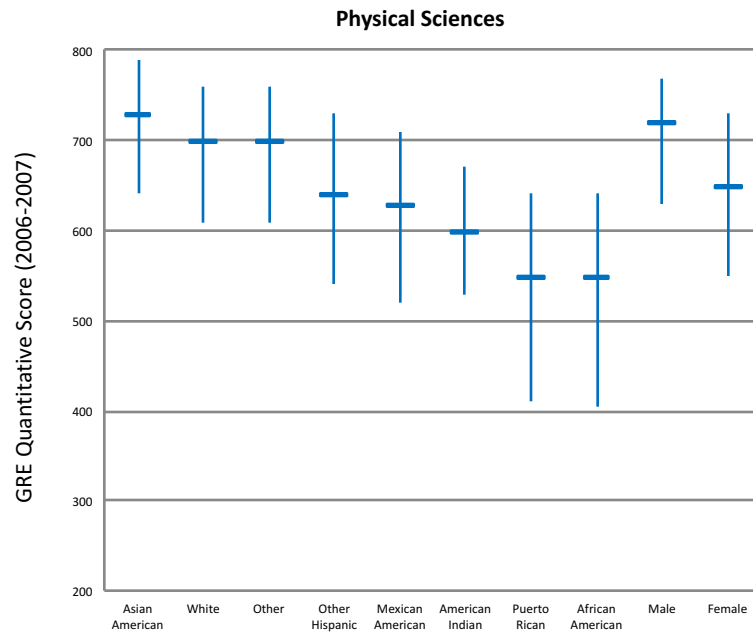
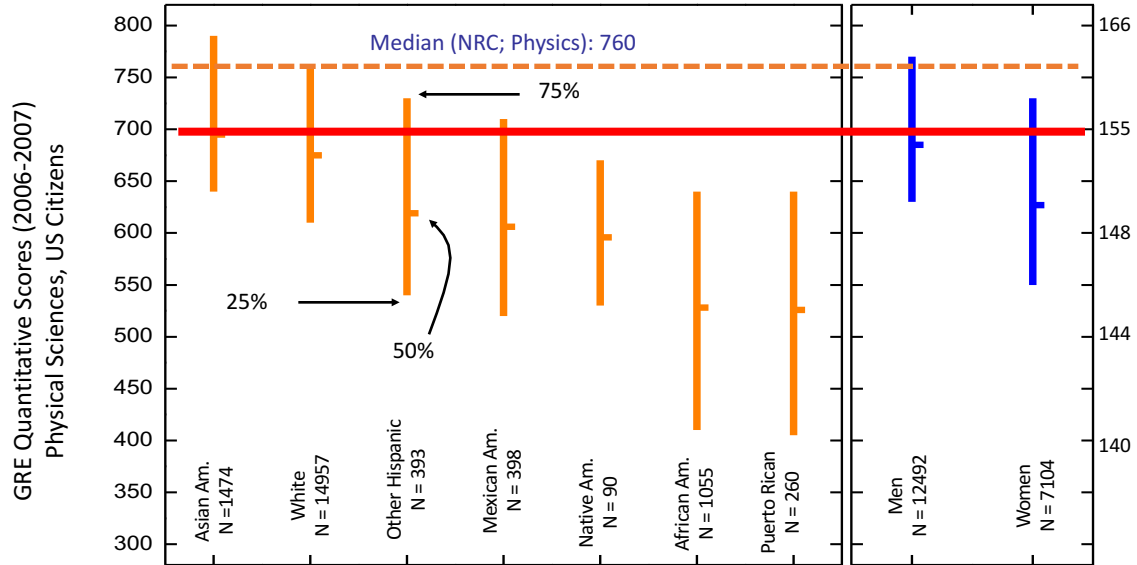
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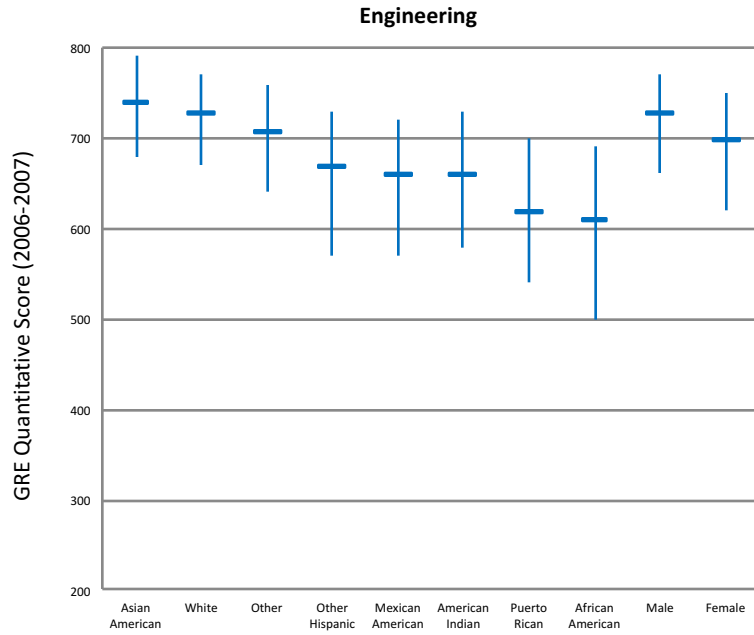
- A cutoff based only on GRE scores should never be used as a sole criterion for denial of admission
- Any department considering the use of a cutoff score should compile a rationale justifying the appropriateness of such a score for each measure:
 - (1) evidence that the proposed cutoff score for the measure usefully distinguishes between individuals who are likely to succeed in graduate school and those who are not, and
 - (2) **the impact of the proposed cutoff score on the institution's goals related to diversity**

<http://www.ets.org/gre/institutions/scores/guidelines/>

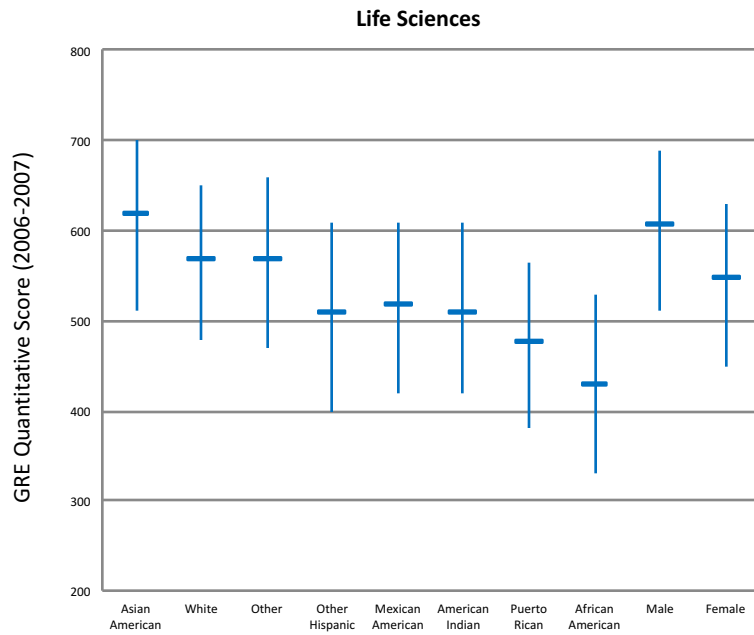
From ETS document, "Factors that can influence performance on the GRE general test 2006-2007"



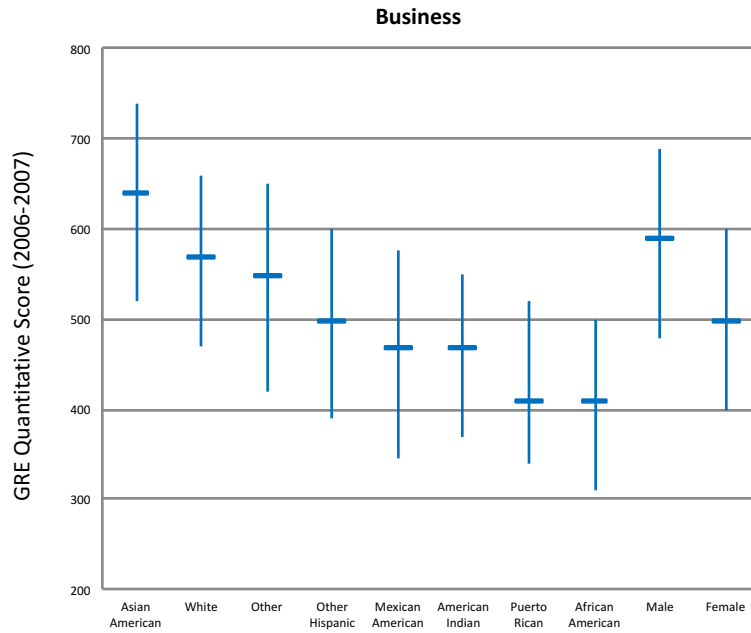
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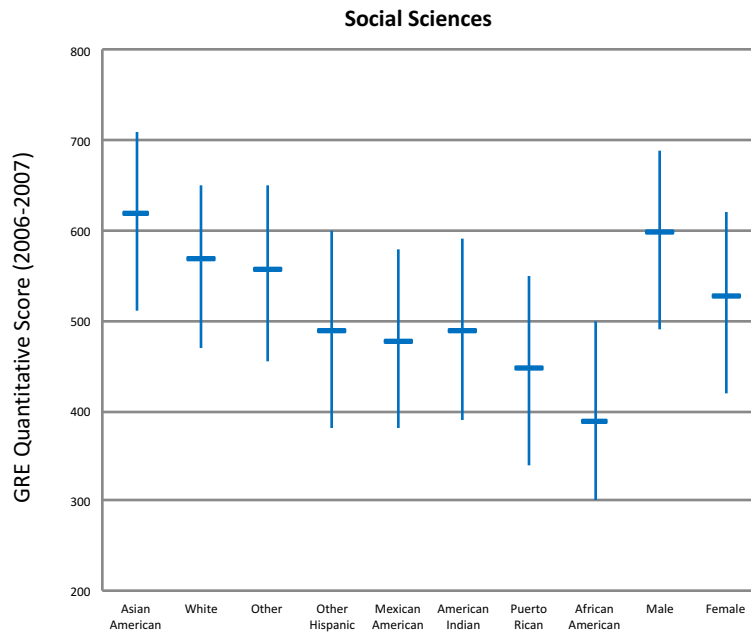
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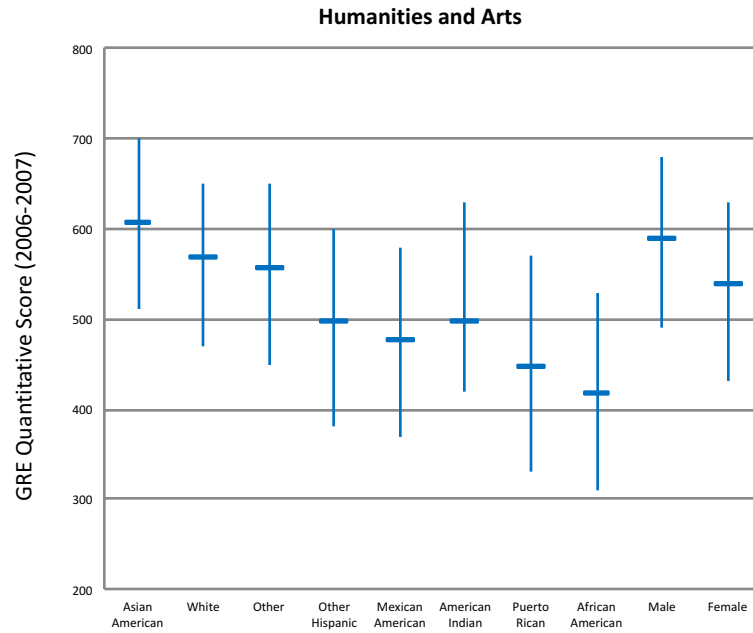
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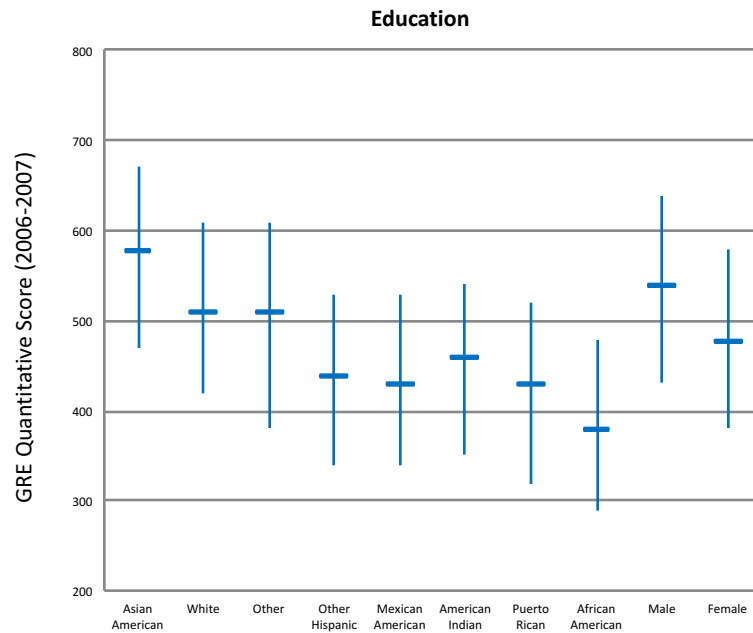
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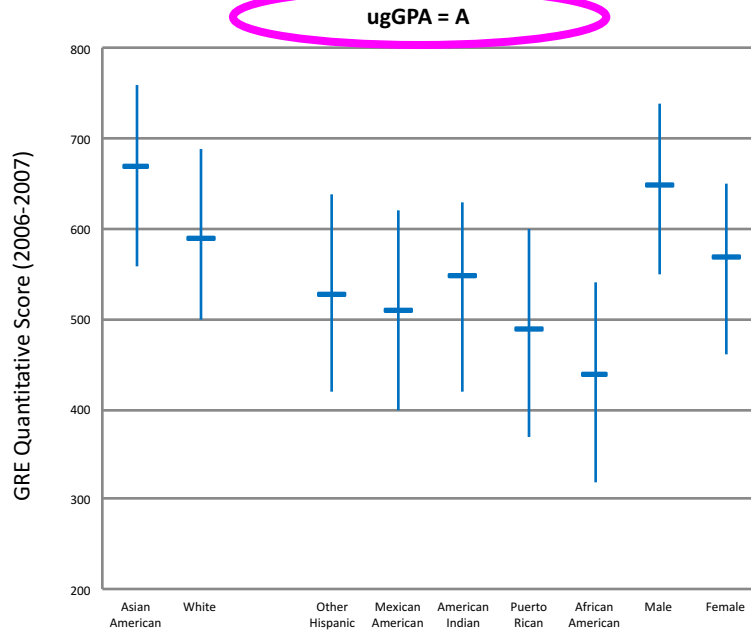
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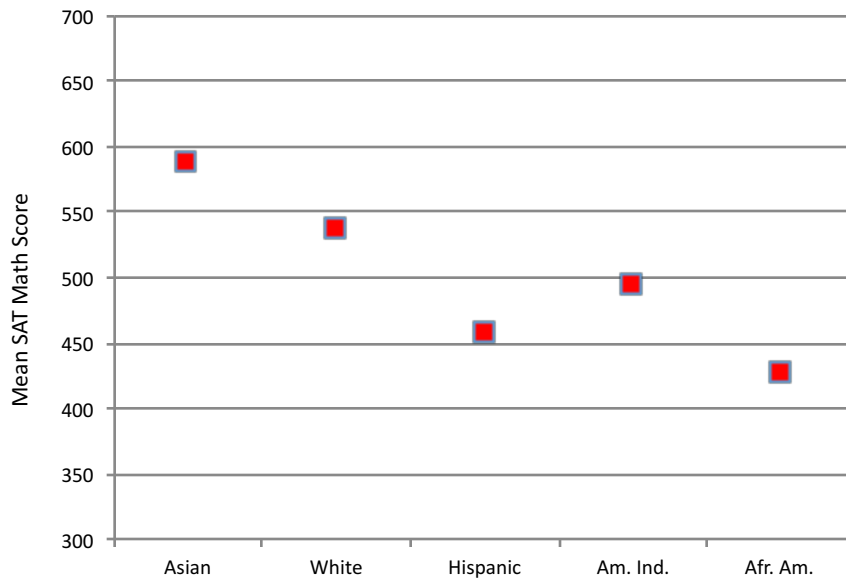
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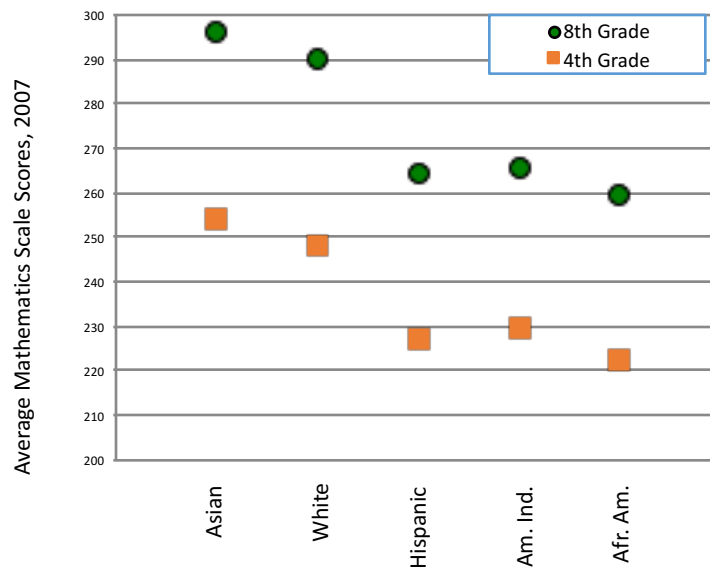
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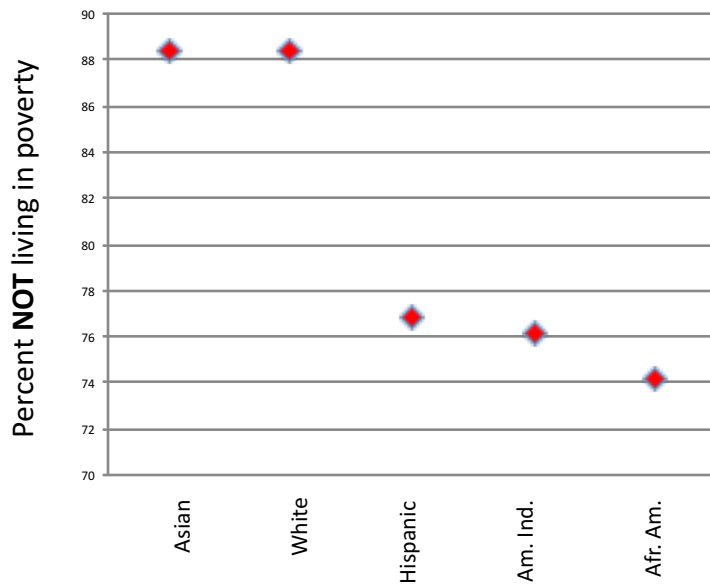
Data: ETS, "Factors that can influence performance on the GRE general test 2006-2007" as cited in Miller, C., & Stassun, K. (2014). A test that fails. *Nature*, 510 (7504), 303-304.



SOURCE: Total Group Profile Report, College Board, 2009 College-Bound Seniors.



SOURCE: NCES. The Nation's Report Card: Mathematics 2009 (NCES 2010-451), National Center for Education Statistics, U.S. Department of Education.



SOURCE: U.S. Bureau of the Census, Income, Poverty, and Health Insurance Coverage in the United States: 2010, Report P60, n. 238, Table B-2, pp. 68-73.; <http://www.npc.umich.edu/poverty/#4>

GRE Test Disparities Are...

- Technically not “bias”
- Nearly independent of intended graduate major
- Qualitatively unchanged when controlling for undergraduate GPA
- Qualitatively the same for
 - GRE Subject test
 - SAT Math
 - 8th grade math achievement tests
 - 4th grade math achievement tests
- **A feature of standardized testing**

Miller, C., & Stassun, K. (2014). A test that fails. *Nature*, 510 (7504), 303-304.

What does the literature say about GREs' ability to predict student success?

Meta-analyses come to differing conclusions about the GRE's validity.

- Morrison & Morrison, 1995;
- Kuncel, et al., 2001;
- Kuncel & Hezlett, 2010
- Orlando, 2005

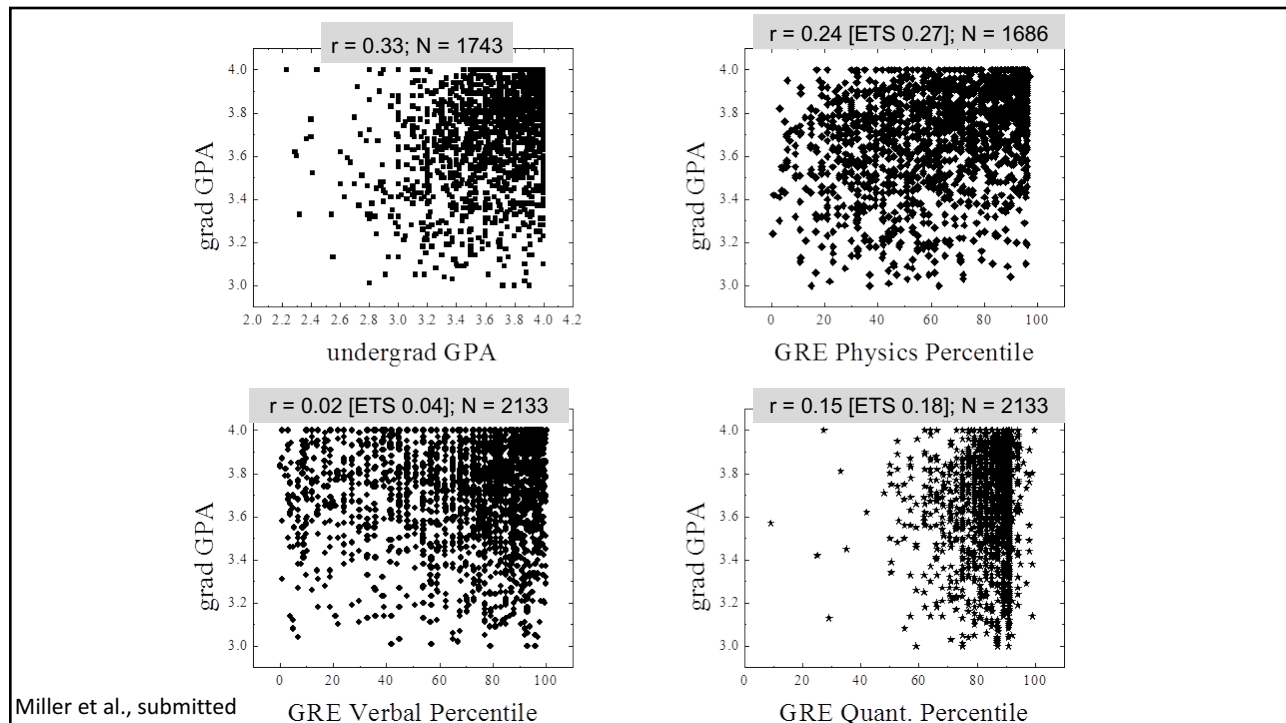
Why?

Studies draw upon different methods, different disciplinary and institutional contexts, and different populations.

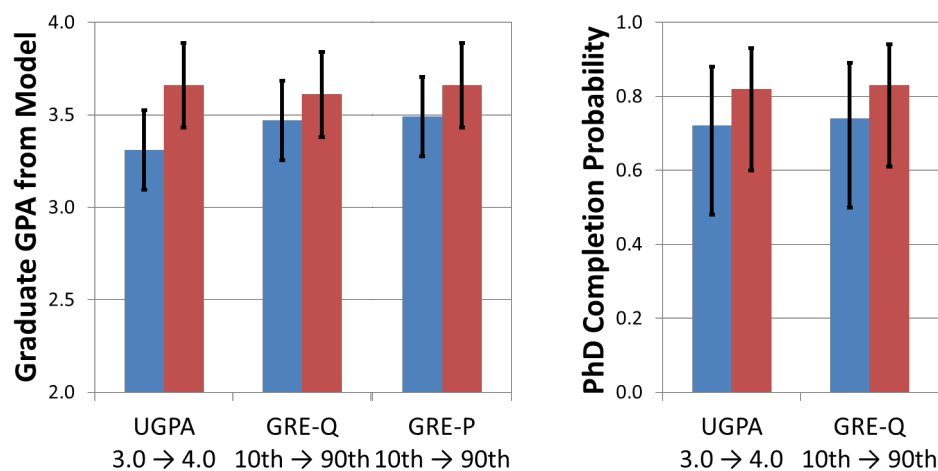
Only a few correct for attenuation bias;
ETS continues to revise the test.

What do we know?

- There has never been a true validity study conducted: denied students aren't studied.
- Correlations vary by exam and by graduate school outcome (Kuncel & Hezlett, 2007).
- The longer the time between the test and the outcome, the weaker the validity.
- A flurry of discipline-specific studies: some find relationships with first year graduate school GPA, none with later outcomes, race or gender (despite score gaps)
 - Psychology: Sternberg & Williams (1997)
 - Marine Sciences: Dore, 2017
 - Biomedical Sciences: Moneta-Koehler, et al., 2017; Hall et al., 2017
 - Physics: Miller et al., 2018



Practical Significance?



The usual weight given to GRE scores
exceeds its predictive capabilities
 and has negative societal impact.

INSIDE HIGHER ED

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An Unlikely Campaign to Move Beyond GRE Scores

ETS plans to discourage graduate departments from relying in excess on test scores in deciding whom to admit.

By **Scott Jaschik** // June 6, 2016

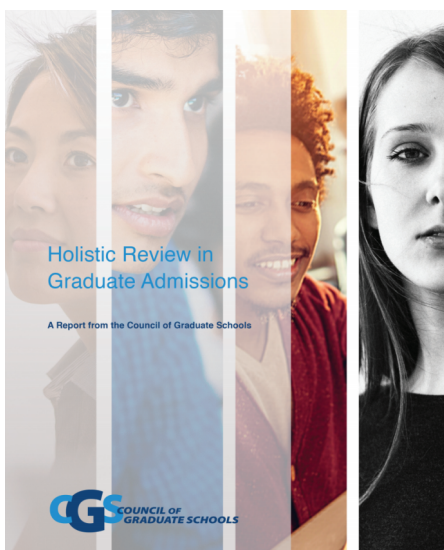
For years, the GRE has faced criticism over its role in the admission of graduate students. Various studies have suggested that departments rely too heavily on the GRE and as a result end up minimizing the chances that they will admit female, black and Latino applicants. And failing to admit more of such applicants may well doom efforts to diversify the faculties of many colleges.

GRE

Now, a new campaign is about to begin to encourage graduate departments to stop focusing as much as they have been on GRE scores. The campaign is going to be led by the Educational Testing Service, which produces the GRE, among other tests.

The alternative: Holistic review

What is holistic review?



- “...the consideration of a broad range of candidate qualities including ‘noncognitive’ or personal attributes” (Council of Graduate Schools, 2016, p. iii)
- Contextualize the information you have about applicants. Examples:
 - Grades in context of major & rigor
 - GRE scores in context of known variation by social, national, disciplinary background.
 - Research experience in context of undergraduate institution.
- Take a systematic approach (not ad hoc) to mitigate implicit bias & increase efficiency.

http://cgsnet.org/ckfinder/userfiles/files/CGS_HolisticReview_final_web.pdf

Some introspection

A: Think about your
most successful students.

What qualities made them successful?

B: Recall your least
successful students.

Write a few notes about why
they did not work out.

What parts of your admissions
process select :

For A?

Against B?

NON-COGNITIVE COMPETENCIES

Non-Cognitive Competencies

- Social and emotional skills that we use to navigate life.
 - Initiative
 - Persistence
 - Conscientiousness
 - Self-confidence
- Measurable!
- Results from decades of psychology research (developmental, social, and industrial-organizational)
 - Predict academic/job performance
 - Little, if any, group differences by gender and race
 - Orthogonal to cognitive measures (e.g., GPA, SAT/GRE)
 - Domain specific. Some will be specific to academia, grad school, and/or fields of study.

Self Management

Optimism: Persistence in pursuing goals despite obstacles and setbacks.

Trustworthiness: Maintaining integrity.

Achievement Orientation: Striving to improve or meeting a standard of excellence.

Conscientiousness: Taking responsibility for personal performance.

Adaptability: Flexibility in handling change.

Emotional Self-Control: Keeping disruptive emotions/impulses in check.

Initiative: Readiness to act on opportunities.

Self Awareness

Self-Confidence: A strong sense of one's self-worth and capabilities.

Accurate Self-Assessment: Knowing one's strengths and limits.

Emotional Awareness: Recognizing one's emotions and their effects.

Relationship Management

Teamwork and Collaboration: Working with others toward shared goals and creating group synergy in pursuing collective goals.

Communication: Listening openly and sending convincing messages.

Building Bonds: Nurturing instrumental relationships.

Conflict Management: Negotiating and resolving disagreements.

Influence: Wielding effective tactics for persuasion.

Change Catalyst: Initiating or managing change.

Inspirational Leadership: Inspiring and guiding individuals and groups.

Developing Others: Sensing others' development needs, bolstering their abilities.

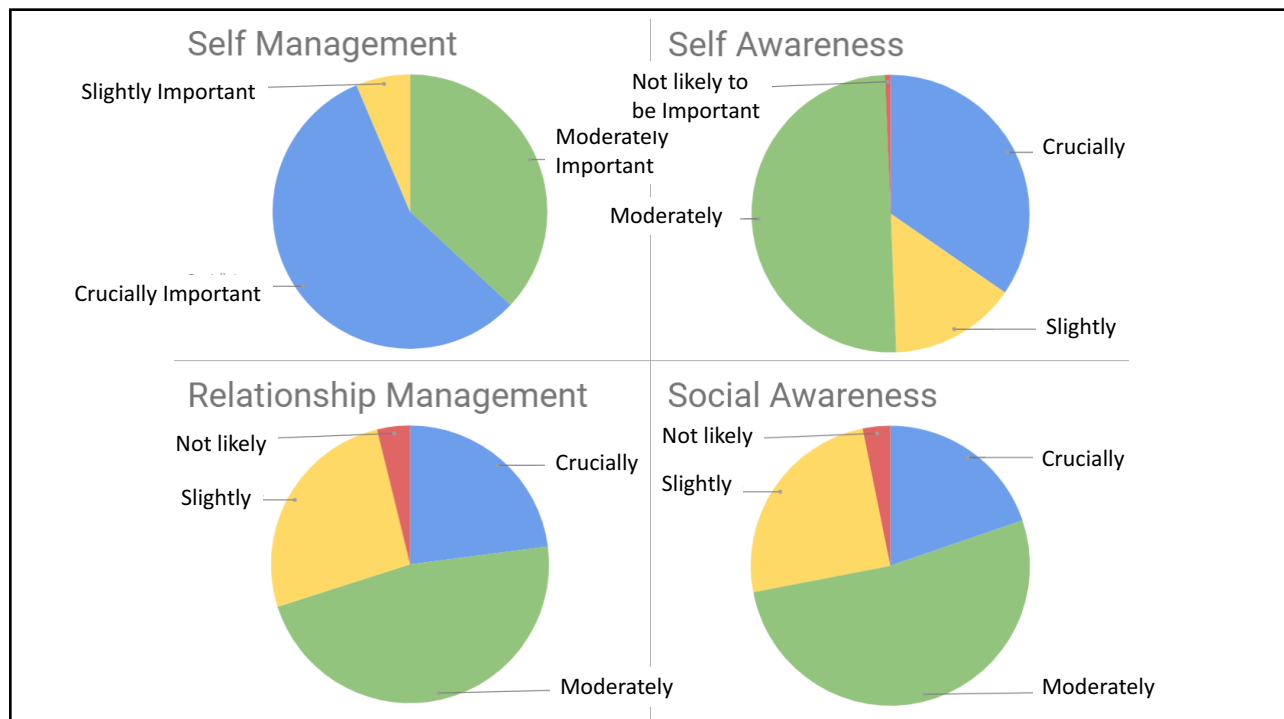
Social Awareness

Cultural Awareness: Respecting and relating well to people from varied backgrounds.

Organizational Awareness: Reading a group's emotional currents and power relationships.

Empathy: Sensing others' feelings and perspectives, and taking an active interest in their concerns.

Service Orientation: Anticipating, recognizing, and meeting customers' needs.



Correlating professional performance with admissions criteria and non-cognitive competencies

	Didactic	Clinical
Cognitive	Yes	No
Non-Cognitive	Maybe	Yes

Self-Management competencies correlate with clinical grade.

- | | |
|----------------------------|----------------------|
| 1. Achievement Orientation | 5. Trustworthiness |
| 2. Adaptability | 6. Conscientiousness |
| 3. Initiative | 7. Optimism |
| 4. Emotional Self-Control | |

“Cognitive ability and knowledge are threshold aspects of professional work, necessary but not sufficient for outstanding professional performance.”

Victoroff and Boyatzis, J. Dent. Ed 77, 416 (2013)

Options for assessing non-cognitive competencies

Applicant self-assessment

- Asks about behaviors
- We are developing this via an NSF grant
- Susceptible to social desirability bias and faking

Exchange personal statement for several short answer items (e.g., ~150 words each)

- Tailor application to a rubric
- Most immediately feasible
- Levels the playing field

Samples

- If we called your faculty mentors, what would they say you are really good at?
- What are you most proud of accomplishing?
- Describe an academic challenge you faced, how you handled the situation, and what you learned from it.
- What will be the biggest challenge for you in graduate school?
- Why graduate school?

Citation: [Am. J. Phys.](#) 79, 374 (2011); doi: 10.1119/1.3546069

RUBRICS

Rubrics offer benefits that redress common drawbacks in many programs' process.

- **EFFICIENCY** is enhanced by expediting review, reducing faculty load.
- **STRUCTURE** for a process in which many applicants are compared on multiple dimensions.
- **SPECIFICITY** about what reviewers *should* be looking for may reduce implicit bias and prevent unseemly considerations from creeping in.
- **TRANSPARENCY** about evaluation criteria is good for decision makers, their colleagues, and applicants themselves.
- **RELIABILITY** across raters can be assessed.
- **ACCOUNTABILITY** heads off charges that the process is unfair.



Anonymous R1 Physics PhD Program on Efficiency

“...people just said it went faster for them with a rubric, because they knew what they were looking for, and knew they were being consistent. It's important that the range of values assigned to rubric criteria was small and each value had a clear definition.”

Example from Anonymous R1 Physics PhD Program

Criteria they used this year to assess research accomplishments

Publications & presentations

- 0 No evidence
- 1 Level of student-focused/regional conf; co-author of unrefereed pub (thesis or on-campus conf.)
- 2 Level of professional conf. Of national scope or co-author of refereed pub
- 3 Level of first-authored refereed pub

Variety & length of research commitment

- 0 None evident
- 1 Comparable to a senior thesis
- 2 Either worked with 1 adviser for 2+ years or multiple advisers over 2+ years (REU = 1 year)

Exceptional creativity, productivity, or teamwork in research

- 0 No evidence (should be typical grade in most cases)
- 1 Evidence present in letters and/or essay

Example Rubric: Accurate Self-Assessment

Competency	High	Medium	Low
Accurate Self-Assessment	Clear, realistic, balanced statement of strengths and weaknesses, corroborated by other evidence; clearly works on self development	Trouble identifying strengths and weaknesses; sometimes inconsistent with other evidence. seeks both positive and negative feedback, but may not follow through	Notably or consistently overstates abilities, limited/no evidence of self-assessment; does not appear to learn from past experiences

Developing a rubric:

Identify qualities on which everyone should be evaluated.

- Here, knowing your program mission can be very helpful.
- Qualities can be broad if you want to leave room for individual interpretation & multiple ways for people to fulfill them
- Or, qualities, can be narrowly defined if you want a highly structured process.
- *Examples:* Research experience, Academic preparation, Clearly defined goals align with program expertise
- *Recommended:* If you choose to require GRE scores, fold GRE scores and grades into a single judgment of academic preparation, to prevent anchoring bias and/or attributing small differences in scores/grades into large differences in overall quality.

Developing a rubric:

Define how you will measure/ operationalize the qualities named above.

- What does it mean for an applicant to be outstanding, strong, acceptable, or weak on each of these?
- The more concrete your definitions, the more consistent you can expect your judgments to be.
- *Recommended:* Create space for comments to justify assessments; Leave open the possibility of naming unique strengths that merit special consideration.
- *Optional:* Weight some qualities more than others.

<div> <div>FISK-VANDERBILT</div> <div>Master's-to-Ph.D.</div> <div>BRIDGE PROGRAM</div> </div>			
Attribute	Score		
	High	Medium	Low
Positive Self-Concept	Expresses confidence they can complete challenging goals, makes positive statements about abilities	Shows confidence and independence but may be unsure about adequacy or skills	Is unsure they can complete the program, exhibits low self-esteem
Realistic Self-Appraisal	Can clearly and realistically delineate strengths and weaknesses, works on self development	Has trouble identifying strengths and weakness but appreciates/seeks both positive and negative feedback	Over or understates abilities, does little to no self-assessment, does not appear to have learned from experiences
Preference for Long vs. Short Term Goals	Clearly communicates long-range goals beyond the PhD	Primary goal is PhD completion	Is vague about long-term goals, or goals are short term such as coursework
Support Person Availability	Can define a professional support network including mentors	Expresses support from one individual, or family or community	Expresses little or no support from family or institution for goals
Leadership/Community Involvement	Demonstrates involvement and leadership ability in either academics, family, community, religious group, or athletics	Demonstrates involvement in groups in academia or extramural but has not shown leadership	Not involved in institutional or community group, no demonstrated leadership
Knowledge in a Field/Non-Traditional Learning	Has engaged in, and learned from, experiences outside the classroom, i.e. performed independent research, extramural activities, self-taught skills	Shows some evidence of non-traditional learning experience	Has not engaged in or indicated learning from experiences outside the classroom
Perseverance	Can describe a time they failed or encountered an obstacle and successfully coped.	Can identify a time they hit an obstacle but has trouble defining how they overcame the challenge.	Has little experience with failure/obstacles. Cannot provide an example or describe response

Modified from Sedlacek

Academic Preparation

Research

Fit with program

Non-Cognitive Competencies

item	subitem	High	Medium	Low
Fit with program	research	research interests align with multiple faculty in multiple subfields	research interests align with multiple faculty in one subfield	limited alignment between student interests and faculty expertise
	faculty	someone wants to hire as RA now and/or there is a clear fit with current faculty expertise	someone could supervise, but interests do not directly support a faculty member's work	faculty aligned with applicant's interests are not seeking students
	community	has clearly contributed positively to prior department/school culture, and would do the same for our program	some evidence of participating in service activities	applicant only discusses him/herself; no evidence of engagement in department or university activities
	diversity	applicant has been an active advocate for diversity	applicant has been an advocate for diversity, or contributes to another type of diversity the department seeks	contributions to diversity are unclear from the application

item	subitem	High	Medium	Low
Academic Preparation	Physics Coursework	A- or better in all: CM1&2, EM1&2, QM1&2, SM1	B or better in all: CM1&2, EM1&2, QM1&2, SM1; OR A- or better in CM1, EM1, QM1, SM1	A- or better in EM1 and CM1; B average in advanced courses; any C grades without explanation
	Math Coursework	Real and Complex Analysis, Group Theory with A grades	DiffEq, Linear, and a Math Methods course, all with A grades; or more than this with B-A grades	Bare bones math prep (e.g., up to DiffEq), or low grades regularly on math
	Computational Coursework	one year or more of computational physics or equivalent, with no grade below A-	one computational physics course or equivalent programming with B or better	no formal programming apparent or low grades
	Academic honors and/or recognitions	multiple honors, e.g., Dept/University Honors; Phi Beta Kappa, etc	one academic award/recognition	No academic honors in college documented in the application
Research	variety/duration	two years in research	one year in research; only REUs	nothing more than coursework laboratories
	technical skills	a variety of experiment, theory, and/or computational skills	has developed only one class of skill (exp or theory or comp)	nothing more than coursework laboratories
	dispositions	clear commitment to and enthusiasm for research; AND understands what the process entails	clear commitment to and enthusiasm for research; OR understands what the process entails	not clear if they know what they are getting into with a PhD; seems lukewarm about research
	clarity of interests	student has specific interests, is clear about details, and expresses understanding of the big picture implications	student can state interests but they are general or superficial	student does not have clearly stated interests
Fit with program	research	research interests align with multiple faculty in multiple subfields	research interests align with multiple faculty in one subfield	limited alignment between student interests and faculty expertise
	faculty	someone wants to hire as RA now and/or there is a clear fit with current faculty expertise	someone could supervise, but interests do not directly support a faculty member's work	faculty aligned with applicant's interests are not seeking students
	community	has clearly contributed positively to prior department/school culture, and would do the same for our program	some evidence of participating in service activities	applicant only discusses him/herself; no evidence of engagement in department or university activities
	diversity	applicant has been an active advocate for diversity in physics	belongs to an underrepresented identity group; first generation in college or low SES; and/or contributes to another type of diversity the department seeks	contributions to diversity are unclear from the application
Non-Cognitive Competencies	Achievement Orientation	Consistently strives to improve or meet a high standard of excellence in all areas	Has demonstrated a high standard of excellence in selected areas	No evidence of striving for excellence provided in application or student record
	Conscientiousness	Takes responsibility for personal performance, both the good and the bad; AND demonstrates efficiency and organization	Takes responsibility for personal performance, both the good and the bad; OR demonstrates efficiency and organization	No evidence of taking responsibility for performance AND minimal evidence of efficient, organized work
	Initiative	Consistently seeks out or acts on opportunities AND takes leadership	Consistently seeks out or acts on opportunities AND takes leadership	Has not sought out or taken advantage of opportunities AND does not have a record of leadership
	Teamwork and Collaboration	Successfully worked with others toward shared goals in research and/or extracurriculars	May have a preference for individual work, but application describes prior work with others.	No clear evidence of prior collaborative work
	Persistence	Application clearly describes successful coping with failures/obstacles	Basic or perfunctory description of overcoming challenges	Application does not describe experience with failure/obstacles
	Realistic Self Appraisal	Thoughtful & clear assessment of strengths and weaknesses; Evidence of working on self	Basic statements about strengths and weaknesses	One dimensional assessment of abilities (over or understated); little evidence of self-assessment or

Full physics
example
linked here.

Develop specifics for rubric

Using the rubric

- A rubric is only as beneficial as users' fidelity to it.
- Calibrate and increase inter-rater reliability by having all members independently rate two applications, then meet to discuss how they came to their scores.
- Ensure each application is reviewed by 2+ people. If there is significant divergence in the ratings, bring in a third reader.
- Prepare in advance a plan to subject very unique cases to a different sort of evaluation.

Practice using rubric with short-answer personal statements.

Thank you!

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