USE OF GRADUATE RECORD EXAMINATIONS (GRE) IN VETERINARY MEDICAL ADMISSIONS

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Since its inception in 1949, the Graduate Record Examinations (GRE™) have played a key role in graduate school admissions decisions at universities across the United States. Colleges and schools of veterinary medicine are no exception – in the most recent version of the Comparative Data Report compiled annually by the Association of American Veterinary Medical Colleges (AAVMC)[1], 75% (24/32) of U.S. member institutions reported GRE™ scores as part of their first-year class profile. Increasingly, though, the merits of GRE scores as a useful measure of academic and professional potential are being questioned and debated.

In general, significant positive correlations between GRE scores and academic performance in the early years of graduate school have been repeatedly documented. For veterinary medical education specifically, this finding has been broadly validated across a range of institutions and investigators starting as early as 1990, if not before.[2-7] Similar results have been recently documented for biomedical graduate students.[8] However, in 2014 a pivotal report was published by Miller and Stassun in *Nature* indicting the GRE™ as seriously biased on the basis of race/ethnicity, gender, and socio-economic status.[9]

Indeed, these biases are substantial and well recognized. Quoting directly from the *Nature* publication:

"According to data from Educational Testing Service (ETS), based in Princeton, New Jersey, the company that administers the GRE™, women score 80 points lower on average in the physical sciences than do men, and African Americans score 200 points below white people."

Stated from an alternative perspective, if GRE™ scores were merely used to establish a minimum criterion for admissions applicant screening purposes, "…only 26% of women, compared to 73% of men, score above 700 on the GRE Quantitative measure. For minorities, this falls to 5.2%, compared with 82% for white and Asian people."

In her *Atlantic* article entitled *The Problem with the GRE™ – The exam "is a proxy for asking 'Are you rich?' 'Are you white?' 'Are you male?'"* (March1, 2016),[10] Victoria Clayton notes that Miller and Stassun's work is consistent with research dating back decades from the University of Florida, Stanford, New York University, the University of Missouri, and ETS itself. This body of work has consistently shown that the GRE™ underpredicts the success of minority students. The race/ethnicity and gender biases are thought to have complex, cultural foundations while the socio-economic bias simply reflects a disparity in educational systems and in access to test-preparation resources based on financial means. The bottom line is that, across the U.S., we have differential educational, economic, and social systems in which everyone does not receive equal opportunity.

Unfortunately, many faculty members who sit on admissions panels erroneously equate GRE™ scores with a candidate's innate intelligence. Among candidates, though, it's widely acknowledged that test-takers can be coached to do well on the GRE™ if they're able to spend the time and money required for prep classes or tutoring offered by companies such as Princeton Review or Kaplan. Sadly, the mere cost of taking the GRE™—about $205 —is enough of a barrier for many prospective students.

At a time when advancing diversity, equity, and inclusion in veterinary medicine is at or near the top of the strategic priority list for virtually all veterinary medical organizations, whether academic or in the industry, this situation is extremely concerning. Any use of such a biased measure as a foundation for admission decisions can only be expected to yield a biased selection process – albeit unintentional. And clearly, continued reliance on GRE™ for admission decisions will be one important ongoing source of unintended institutional racism, sexism, classism, and/or elitism across academic veterinary medicine – imparting unintended bias against those candidates who might be marginalized based on race, ethnicity, gender, socio-economic status, or geography.

Thankfully, solid alternatives exist.

First, all of the studies cited above as validating the positive correlation between GRE™ scores and academic performance in veterinary medical and biomedical graduate education, along with several more, also establish similar significant positive correlations with various measures of undergraduate GPA.[2-8, 11,12] In fact, on review of the literature, it appears that undergraduate GPA offers a measure of academic potential that is at least as robust, consistent, and reliable as GRE™ scores. What's more, undergraduate GPA has not demonstrated the systemic biases that characterize GRE scores. So, moving away from GRE altogether is a viable option, one that has already been implemented at a number of AAVMC member institutions.

And on a broader scale, it has long been recognized that neither GRE™ scores nor undergraduate GPAs provide much insight into the key non-academic skills, knowledge, attitudes, and aptitudes (SKAs) necessary for success in veterinary medicine.[13-15] These critical skills associated with scholarly and professional competence include such attributes as leadership, communications, critical thinking, ability to work in and/or lead teams, perseverance, adaptability, integrity, and self-awareness. To consider these factors in an admissions process involves a holistic approach, where both basic intelligence and a broader set of personal attributes are considered.

Finally, moving away from the GRE™ and considering the entire candidate in a holistic manner will send a very positive message to those groups previously marginalized. If used effectively in recruitment messages, applicant numbers might reasonably be expected to increase from traditionally underrepresented communities.

So, what's next?

In effect, admissions policies and processes constitute the gateway to the veterinary medical profession, and admissions committees inherently represent the gatekeepers. In such a critical role, potential changes to admissions policies and processes clearly warrant careful, reasoned consideration based on structured, data-driven analyses. And then when changes are indeed selected for trial implementation, subsequent monitoring of the outcomes/impacts calls for nothing less than a similar structured, data-driven follow-up. As cited above, a plethora of noteworthy examples exists in the veterinary medical literature[4-7, 11,12] toward developing a more evidence-based approach to admissions. Although identification of possible selection bias was not a primary objective in any of those studies, more recent works have, in fact, identified such bias[16,17] when analyzing data across AAVMC member institutions.

As admissions committees contemplate potential changes to their use of GRE™ and/or other admissions criteria, vigilance both within and across institutions will be crucial. To start, it might be useful to assemble a consortium of those within AAVMC who have stopped using GRE, to collectively study the potential impact on student success so results can be shared across the AAVMC membership. Then, ongoing evaluation of colleges' and schools' of veterinary medicine admissions processes – including who we attract, who we admit, who we graduate, and who achieves in the profession – will provide the ultimate measure of our success. Active, progressive data collection, rigorous analysis, and open sharing of results will be vital to identify and highlight improvements along the way, and to celebrate our successes.

REFERENCES

1. 2020-2021 Comparative Data Report (CDR). Association of American Veterinary Medical Colleges (AAVMC), Internal Document, Washington, DC, 2020.
2. Confer AW. Preadmission GRE scores and GPAs as predictors of academic performance in a college of veterinary medicine. J Vet Med Educ, 1990;17(2):16–20.
3. Powers DE. Validity of Graduate Record Examinations (GRE) general test scores for admissions to colleges of veterinary medicine. J App Psychol, 2004; 89(2):208-219.
4. Rush BR, Sanderson MW, Elmore RG. Pre-matriculation indicators of academic difficulty during veterinary school. J Vet Med Educ, 2005;32(4):517-522.
5. Mejia Abreu H. Evidence-based admissions: correlates of students' academic success in veterinary medical school. PhD Dissertation, Department of Higher, Adult, and Lifelong Education, Michigan State University, 2013; 134pp.
6. Roush JK, Rush BR, White BJ, Wilkerson MJ. Correlation of pre-veterinary admissions criteria, intra-professional curriculum measures, AVMA-COE professional competency scores, and the NAVLE. J Vet Med Educ, 2014;41(1):19–26.
7. Molgaard LK, Rendahl A, Root Kustritz MV. Closing the loop: using evidence to inform refinements to an admissions process. J Vet Med Educ, 2015;42(4):297-304.
8. Moneta-Koehler L, Brown AM, Petrie KA, Evans BJ, Chalkley R. The Limitations of the GRE in Predicting Success in Biomedical Graduate School. PLoS ONE, 2017 12(1): e0166742. https://doi.org/10.1371/journal.pone.0166742.
9. Miller C, Stassun K. A test that fails. Nature, 2014; 510:303-304.
10. Clayton V. The problem with the GRE - The exam "is a proxy for asking 'Are you rich?' 'Are you white?' 'Are you male?'" The Atlantic, March 1, 2016
11. Kogan LR, Stewart SM, Schoenfeld-Tacher R, Janke JM. Correlations between pre-veterinary course requirements and academic performance in the veterinary curriculum: implications for admissions. J Vet Med Educ, 2009;36(2):158-165.
12. Burzette RG, Danielson JA, Wu T-F, Fales-Williams AJ, Kuehl KH. Undergraduate rigor scores: do they predict achievement in veterinary school? J Vet Med Educ, 2017;44(2):323-330.
13. Klausner JS. NCVEI update: determining success competencies. J Am Vet Med Assoc, 2001; 219:1527–1528.
14. Lewis RE, Klausner JS. Nontechnical competencies under-lying career success as a veterinarian. J Am Vet Med Assoc, 2003; 222:1690–1696.
15. Lloyd JW, King LJ, Klausner JS, Harris D. National workshop on core competencies for success in the veterinary profession. J Vet Med Educ, 2003;30(3):280–284.
16. Lloyd, J.W. Evaluating the depth of quality in the 2018 AAVMC applicant pool. Association of American Veterinary Medical Colleges, Washington, DC, July 2019, 9 pp.
17. Lloyd, J.W., and L.M. Greenhill. AAVMC admissions: report of 2019 student survey analysis. Association of American Veterinary Medical Colleges, Washington, DC, Nov. 2020, 14 pp.