



5-2024

## (Non)cognitive Dissonance? A Stakeholder-based Exploration of the Consideration of Graduate Admissions Applicants' Personal Skills and Qualities

Reginald M. Gooch

*Educational Testing Service, rmgooch@ets.org*

Joseph H. Paris

*Delaware Valley University, joseph.paris@delval.edu*

Sara B. Haviland

*Educational Testing Service, shaviland@ets.org*

Jose Sotelo

*Northwestern University, jsotelo@ets.org*

Follow this and additional works at: <https://scholarworks.wmich.edu/jca>



Part of the Educational Assessment, Evaluation, and Research Commons, Educational Psychology Commons, Higher Education Commons, Industrial and Organizational Psychology Commons, and the Personality and Social Contexts Commons

### Recommended Citation

Gooch, Reginald M.; Paris, Joseph H.; Haviland, Sara B.; and Sotelo, Jose (2024) "(Non)cognitive Dissonance? A Stakeholder-based Exploration of the Consideration of Graduate Admissions Applicants' Personal Skills and Qualities," *Journal of College Access*: Vol. 9: Iss. 1, Article 4.

Available at: <https://scholarworks.wmich.edu/jca/vol9/iss1/4>

This Article is brought to you for free and open access by the Western Michigan University at ScholarWorks at WMU. It has been accepted for inclusion in Journal of College Access by an authorized editor of ScholarWorks at WMU. For more information, please contact [wmu-scholarworks@wmich.edu](mailto:wmu-scholarworks@wmich.edu).



# (Non)cognitive dissonance? A stakeholder-based exploration of the consideration of graduate admissions applicants' personal skills and qualities



Authored by  
Reginald M. Gooch (*Educational Testing Service*)  
Joseph H. Paris (*Delaware Valley University*)  
Sara B. Haviland (*Educational Testing Service*)  
Jose Sotelo (*Northwestern University*)

## ABSTRACT

Prospective graduate students' noncognitive attributes are commonly evaluated as a part of a holistic review of their admission applications. Yet it is difficult to determine which noncognitive attributes are considered by those who evaluate graduate admissions applications and what approaches they take to measure applicants' noncognitive attributes. It is even less clear to what degree prospective graduate students understand how they are evaluated for graduate admissions and how the evaluation of their noncognitive attributes factor into admissions decisions. Drawing on surveys of graduate enrollment management (GEM) professionals and prospective graduate students in the United States, our study investigated the noncognitive attributes prospective graduate students and GEM professionals deem important to success in graduate school and the application components each group believes demonstrate those attributes. Results suggest that some alignment exists between the perspectives of prospective graduate students and GEM professionals on the noncognitive attributes most important for completing a graduate program of study. We share recommendations for improving the agreement between prospective graduate students and GEM professionals including the need for more explicit and transparent communication about how graduate admissions applications are evaluated, which is of particular importance as admissions processes forgo the consideration of applicants' race.

**Keywords:** noncognitive, graduate enrollment management, higher education, graduate admissions, equity

Graduate programs have long used measures of applicants' academic preparedness such as undergraduate grade point average (GPA) and standardized admissions tests (e.g., GRE) to gauge the likelihood that applicants will succeed in graduate school (Michel et al., 2019). Yet, the field of graduate admissions is undergoing significant change, particularly following the U.S. Supreme Court rulings ending race-conscious admissions (*Students for Fair Admissions v. Harvard College*, 2017; *Students for Fair Admissions v. University of North Carolina*, 2022). These rulings necessitate reimagining how graduate admission applicants are evaluated, including the ways in which application components are used and the implications of their use for equity and fairness in the graduate admissions process.

Undergraduate GPA and admissions test scores have been shown to predict graduate student success including first year graduate GPA (Darolia et al., 2014; Klieger et al., 2014; Kuncel et al., 2001; Kuncel et al., 2010; Liu et al., 2016; Schwager et al., 2015), scores on comprehensive exams (Dunlap et al., 1998; Hatchett et al., 2017; LeCrom et al., 2016), and faculty ratings of graduate student



## (Non)cognitive dissonance

performance (Kuncel et al., 2001). Yet, particularly in recent years, noncognitive factors have also gained importance as part of holistic review. Kent and McCarthy (2016) refer to holistic review as “a growing strategy for widening the evidence base that graduate programs consider when evaluating a candidate for admissions” (p. iii). Today, most admissions officers report that holistic review is practiced at their institution (Bastedo et al., 2018; Haviland et al., 2023). Some applicant qualities that graduate programs consider through the holistic review process include academic preparedness, demonstrated interest in a program or field of study, research experience, and noncognitive skills such as perseverance (Michel et al., 2019; Paris, Birnbaum, et al., 2024).

There are several arguments that support the consideration of graduate admissions applicants’ noncognitive attributes. Social and emotional skills, for example, are perceived as important for graduate school success (Kent & McCarthy, 2016; Kyllonen et al., 2005; Pacheco et al., 2015; Sowbel & Miller, 2015; Ward, 2007) and contribute to the statistical prediction of graduate school success (e.g., degree completion) when combined with graduate admissions test scores (Kuncel et al., 2001). Including noncognitive factors such as motivation, creativity, and attitude as part of a holistic review may both promote fairness and contribute incremental predictive power for academic outcomes in graduate school (Kuncel et al., 2001; Kyllonen et al., 2005; Niessen et al., 2017; Paris, Birnbaum, et al.,

2024) beyond the consideration of undergraduate GPA and admissions test scores alone.

The consideration of noncognitive attributes may become increasingly important as admissions practices at both the graduate and undergraduate levels are reshaped upon the U.S. Supreme Court’s rulings ending race-conscious admissions in *Students for Fair Admissions v. Harvard College* (2017) and *Students for Fair Admissions v. University of North Carolina* (2022). In U.S. states where affirmative action has previously been eliminated from college admissions, the most common admissions strategies that have been adopted use holistic review or a “top percent” policy under which a percentage of applicants at the top of their graduating high school classes are guaranteed admission to undergraduate institutions (Bleemer, 2023). The use of a top percent plan for graduate admission is unlikely due to the specialized nature of graduate programs, but should graduate programs increasingly rely on holistic review as a tool to build diverse classes of students, the importance of applicants’ noncognitive factors will only increase. In the coming years, institutions will likely look to states such as California and Texas, which previously moved away from race-conscious admissions, to find novel solutions as well to improve upon those states’ outcomes. For example, California observed a decline in underrepresented minority (URM) student undergraduate and graduate degree attainment following the end

## (Non)cognitive dissonance

of race-based affirmative action in admissions, leading to exacerbated socioeconomic inequality (Bleemer, 2022). Measuring applicants' noncognitive attributes is one avenue for exploration as institutions grapple with mandated changes and develop solutions (Knox, 2023; Paris et al., 2023). There is a degree of consensus regarding the importance of noncognitive factors for predicting applicants' success in graduate school. Yet, questions persist regarding how noncognitive factors should be measured and considered in the graduate admissions process in practice. Tools that are commonly used to assess noncognitive factors, such as personal statements and letters of recommendation, for example, may contribute to bias toward applicants from higher income backgrounds (Chetty et al., 2023) and therefore may be unreliable predictors of academic success (Kuncel et al., 2014; Miller, Crede & Sotala, 2021; Rosinger et al., 2021; Woo et al., 2022). At many institutions, graduate admissions is a decentralized function (i.e., applications are evaluated by individual graduate programs rather than by an institution-wide graduate school or graduate admissions office), and there is no standardized process for evaluating applicants' noncognitive attributes, or even which noncognitive factors to consider among an "almost limitless" pool of options (Zwick, 2019, p. 131). Furthermore, noncognitive factors encompass a range of personal skills and qualities that may have varying impact on graduate student success (e.g., degree completion) and how programs

understand and value these skills may vary (Walpole et al., 2002). For example, it is unclear how admissions officers evaluate noncognitive factors within application components such as personal statements and letters of recommendations, personal interviews, or situational judgement tests (Patterson et al., 2016).

In short, noncognitive factors have become increasingly important to the graduate admissions process and are likely to grow in importance. Yet it is difficult to know how the factors themselves are defined, which factors are more or less important to graduate programs, how those factors are evaluated, and whether evaluative criteria and methodologies are valid and reliable. Given the high-stakes nature of graduate admissions and the need for a clear and consistent understanding of holistic review practices, it is important to explore how applicants are impacted by the evolving landscape of graduate admissions. For example, do prospective graduate students understand what criteria and methodologies programs use to evaluate their applications? The opacity of the graduate admissions process can create confusion among some students (Paris, Haviland, et al., 2024). Additionally, there is a lack of research that investigates applicants' understanding of the graduate admissions system (Chari & Potvin, 2019), including their knowledge of how noncognitive factors are assessed.

## (Non)cognitive dissonance

Our study addressed this gap in understanding by exploring whether applicants understand the criteria by which they are evaluated for graduate admission. Using a survey of graduate enrollment management (GEM) professionals (e.g., admissions officers, directors of admissions), we examined which personal skills and qualities they believe are associated with applicants' potential for success in graduate school, and how those skills and qualities are demonstrated through the materials applicants submit. We also asked undergraduate senior-year students the same questions and compared the answers of the two groups to illuminate commonalities and points of divergence. We conclude by discussing implications for equity and fairness in graduate admissions practices.

### Methods

To understand the perspectives of GEM professionals and students on the importance of applicants' noncognitive attributes for success in graduate school, we conducted two national surveys. We administered the first survey to prospective graduate applicants from 46 U.S. states (hereinafter the "student survey"). Survey respondents (hereinafter "students") were recruited through an online crowd-sourcing platform. We piloted the study with 50 students, then administered it to an additional 250 students, receiving a total of 300 responses from undergraduate senior-year students interested in pursuing graduate education (see Table 1 on next page for descriptive statistics). Eighty-one percent

( $n = 243$ ) of students had interest in pursuing a master's degree, and 19% ( $n = 57$ ) had interest in pursuing a doctoral degree, roughly reflecting the proportion of master's (82%) and doctoral degree holders (18%) among the U.S. population of graduate degree holders (U.S. Census Bureau, 2019).

We administered a second survey to GEM professionals (hereinafter the "GEM survey") through email invitations to the membership of NAGAP, the Association for Graduate Enrollment Management. The survey was administered as part of a longitudinal study conducted by disseminating pulse surveys to NAGAP members (e.g., see Haviland et al. (2022)). We received a total of 167 responses among the 1,387 members contacted, for a response rate of 12%. This response rate is greater than prior studies using NAGAP members as the population (e.g., Haviland et al., 2022; Paris, 2021; Paris & Winfield, 2024). Most respondents worked at large (10,000+ students enrolled) or medium (3,000-9,999 students enrolled) institutions. Of our sample, 45 participants did not provide the specific name of the institution at which they worked. The remaining 122 participants provided the name of 113 distinct institutions. We limited our sample to a maximum of three participants from a given institution. In the case that more than three respondents from one institution responded to the survey, three responses were chosen at random to avoid oversampling that institution. Our study, including the survey instruments, was approved by an institutional review board (IRB).

## (Non)cognitive dissonance

Table 1  
Descriptive Statistics of Participants (N = 300)

	<i>n</i>	Percentage
<b>Race</b>		
Asian	48	16.0
Black	26	8.7
White	183	61.0
Mixed	29	9.7
Other	14	4.7
<b>Gender</b>		
Female	192	64.0
Male	107	35.6
Other (Non-binary, self-describe, prefer not to respond)	1	0.3

Students and GEM professionals were asked parallel questions that forced them to rank the top three personal skills or qualities from a list of nine that they believed were important for students' ability to complete a graduate program of study. The nine personal skills and qualities included perseverance/resiliency, leadership, creativity, collaboration, responsibility/self-discipline, curiosity, even-temperedness, sociability, and organization. The personal skills and qualities were drawn from a subset of the attributes defined in the ETS Personal Skills and Qualities (PSQ) tool, a measure of Big Five Personality factors (Kyllonen, 2008; Kyllonen et al., 2005; Kyllonen & Tan, 2023a). To reduce survey length and increase usability, we merged conceptually similar skills and qualities (perseverance and resiliency, responsibility and self-discipline) to reduce the total number of items to nine that the respondents considered. Responsibility and self-discipline are part of the same dimension (Self-Regulations) in PSQ validation studies

and are significantly correlated ( $r = .83$ ). Perseverance and responsibility are not part of the same dimension in the PSQ but are significantly correlated in PSQ validation studies ( $r = .36$ ) and various other literatures (Salisu, 2020). Respondents were not provided with operational definitions of these nine constructs but rather responded to the survey based on their own understanding of the terms. The constructs were presented in this manner to reduce respondent burden and confusion in considering a lengthy list of skills, qualities, and definitions. However, interested readers can find descriptions of the constructs in the Appendix. We associated graduate student success with degree completion as Okahana et al. (2018) found that participants across fields and areas of program focus consistently noted degree completion (i.e., the percentage of students completing a degree within a specific time frame) as a definition of graduate student success. Given the exploratory nature of our study, we analyzed the survey data using



## (Non)cognitive dissonance

descriptive and summary statistics. We present the proportion of our two samples that selected each of the nine personal skills for success in graduate school as most important. Participants could select up to three skills or qualities and therefore proportions exceed 100%.

of greatest importance were responsibility/self-discipline and perseverance/resiliency, with 79% and 72% of participants choosing these qualities, respectively. Organization and curiosity were the third and fourth most frequently selected qualities, with 37% and 32% of participants choosing those qualities, respectively. The three qualities least selected were leadership (19%), sociability (11%), and even-temperedness (4%).

Table 2  
Frequency of Noncognitive Factors Selected by Prospective Graduate Students

Quality	<i>n</i>	Percentage
Responsibility/Self-discipline	236	78.7
Perseverance/Resiliency	216	72.0
Organization	110	36.7
Curiosity	95	31.7
Collaboration	75	25.0
Creativeness	64	21.3
Leadership	58	19.3
Sociability	33	11.0
Even-temperedness	13	4.3

Note. Cumulative percentage exceeds 100% as participants were able to select multiple responses.

### Results

Table 2 presents the top personal skills or qualities that prospective graduate students selected when asked to select the top three that were most important for students' ability to complete a graduate program of study.

Our full sample of 300 participants from the student survey answered the question, selecting 900 skills and qualities in total. The two qualities that most students thought were

Table 3 (next page) presents the top three personal skills or qualities that GEM professionals thought were important to complete a graduate program of study. Our total sample of 167 participants answered the question, selecting a total of 501 skills or qualities. The two qualities that GEM professionals thought were most important were responsibility/self-discipline and perseverance/resiliency with 81% and 80% of participants choosing these qualities, respectively. Collaboration and curiosity were the third and fourth most selected qualities with 39% and 36% of participants choosing those qualities, respectively. Less commonly

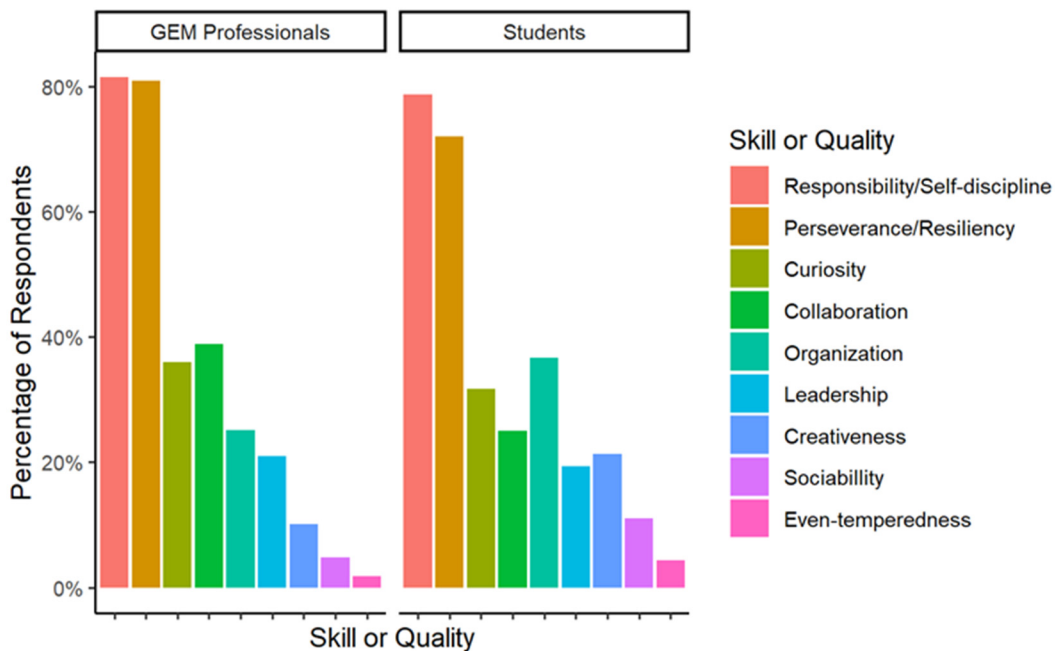
## (Non)cognitive dissonance

Table 3  
Frequency of Non-cognitive Factors Selected by GEM Professionals

Quality	<i>n</i>	Percentage
Responsibility/Self-discipline	136	81.4
Perseverance/Resiliency	135	80.8
Collaboration	65	38.9
Curiosity	60	35.9
Organization	42	25.1
Leadership	35	21.0
Creativity	17	10.2
Sociability	8	4.8
Even-temperedness	3	1.8

Note. Cumulative percentage exceeds 100%, as participants were able to select multiple responses.

Figure 1  
Important Personal Skills and Qualities for Success in Graduate School



Note. Students (N = 300), GEM professionals (N = 167)



## (Non)cognitive dissonance

selected were organization (25%), leadership (21%), creativeness (10%), sociability (5%), and even-temperedness (2%).

Figure 1 (previous page) presents a side-by-side comparison of students' and GEM professionals' reported importance of applicants' skills and qualities for completing a graduate program of study. For both groups, responsibility/self-discipline was the most important quality and perseverance/resiliency was the second most important quality.

### **Do Student Views of the Importance of Noncognitive Attributes Align with Those of GEM Professionals?**

Students and GEM professionals agreed that responsibility/self-discipline and perseverance/resiliency were the most important skills and qualities for completing a graduate program of study. Our finding suggests that students and GEM professionals appear to believe that perseverance would be similarly beneficial for success in graduate school. However, it is unclear from these data alone whether students are making the same assumptions as GEM professionals are about how they can demonstrate this important trait through their application packet. To understand this issue, we asked respondents on both surveys to indicate which common application packet components could demonstrate this trait in a graduate school applicant.

### **Similarities in Application Components that Demonstrate Perseverance and Resiliency**

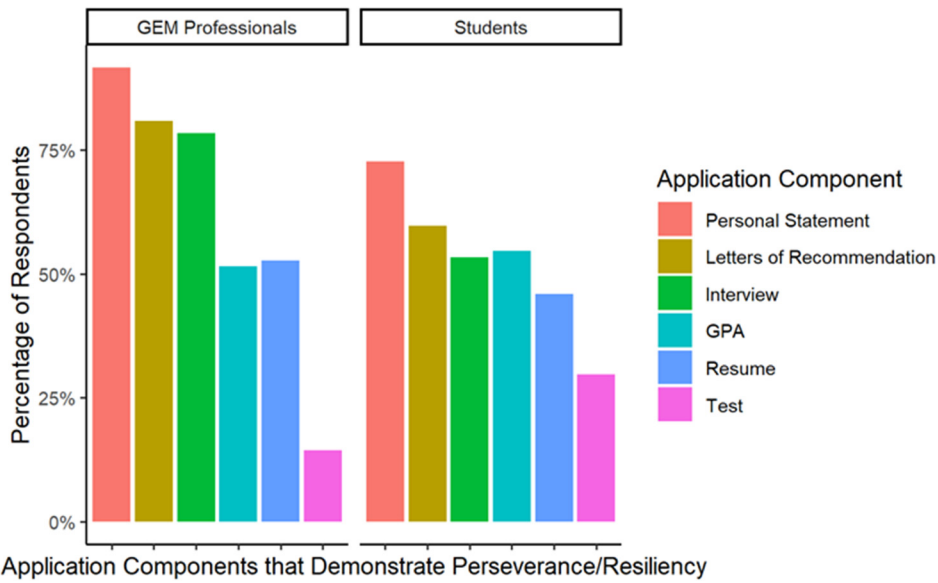
Students and GEM professionals primarily agreed about which application components they believe demonstrate applicants' perseverance and resiliency (see Figure 2 on next page). For example, both groups selected the same top two application components they believe demonstrate these traits: personal statements and letters of recommendation. The most chosen component in both samples was personal statements, which was selected by 72% of students and 92% of GEM professionals, while letters of recommendation was selected by 60% of students and 81% of GEM professionals as components that demonstrate applicants' perseverance and resiliency.

### **Inconsistency Among the Application Components that Demonstrate Responsibility and Self-Discipline**

Contrary to the pattern that we observed with students' and GEM professionals' perspectives on perseverance and resiliency, students and GEM professionals did not share the same level of agreement regarding the application components that they believed best demonstrate applicants' responsibility and self-discipline. Students indicated that GPA (75%), letters of recommendation (69%), and standardized test scores (61%) were the application components that best demonstrate applicants' responsibility/self-discipline whereas GEM professionals reported that letters of recommendation (81%), personal statements (73%), and GPA (71%) were the application components that best demonstrate

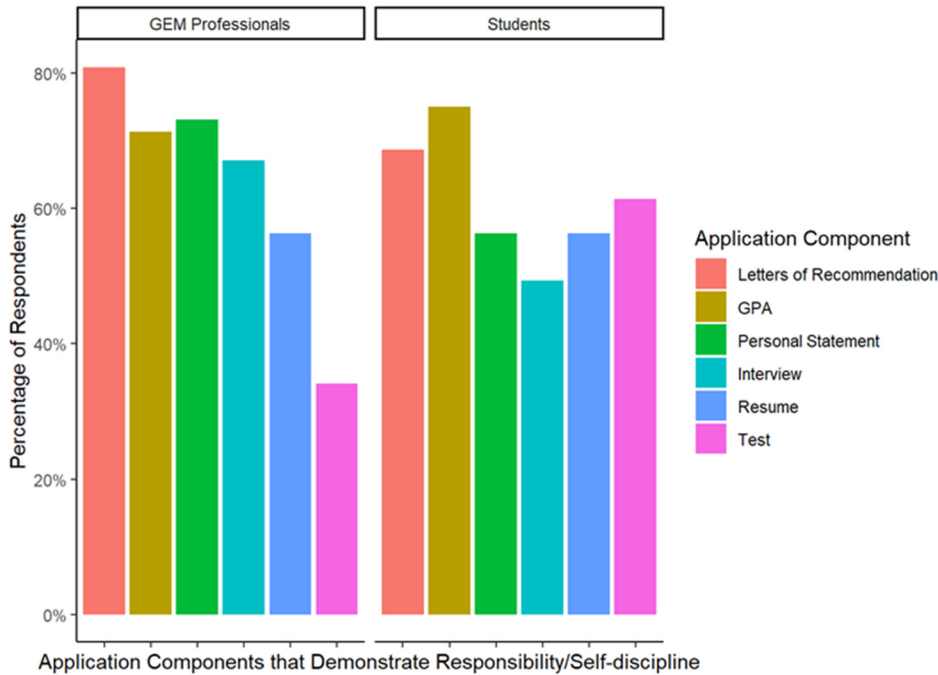
## (Non)cognitive dissonance

Figure 2  
Application Components That Demonstrate Perseverance and Resiliency



Note. Students (N = 300), GEM professionals (N = 167)

Figure 3  
Application Components That Demonstrate Responsibility and Self-discipline



Note. (N=300), GEM professionals (N=167)

## (Non)cognitive dissonance

these skills and qualities. Figure 3 (previous page) presents these results. Although responsibility/self-discipline was selected as the most important skill or quality for degree completion by both groups, our findings suggest that students may attempt to demonstrate that they possess these attributes in a different manner than what may be evaluated or expected by GEM professionals.

### Inconsistent Alignment Among the Skills and Qualities of Less Importance

Although students and GEM professionals agreed that responsibility and self-discipline were the most important applicant qualities for graduate degree completion, there was less consistency in the reported importance of other qualities. Yet there is a clear second tier of desirable skills and qualities, each of which was ranked between third and fifth most important by both groups. These qualities included collaboration, curiosity, and organization. The perspectives of students and GEM professionals were misaligned within this tier, however, as students indicated that organization was more important for degree completion than the level of importance reported by GEM professionals. Conversely, GEM professionals reported that collaboration was more important for degree completion compared to the level of importance reported by students. Students reported that leadership was more important for graduate degree completion compared to the level of importance reported by GEM professionals. Conversely, GEM professionals indicated that creativity was

more important for degree completion than the level of importance reported by students. Students and GEM professionals generally agreed on the importance of sociability and even-temperedness, both of which were reported to be least important for completing a graduate program of study.

### Discussion and Recommendations

Generally, there was alignment between students' and GEM professionals' views on the relative importance of the personal skills/qualities represented in this survey. Students and GEM professionals agreed that responsibility/self-discipline and perseverance/resiliency are the two most important skills and qualities for completing a graduate program of study. Aligned perspectives on the importance of these qualities presents a mutually beneficial scenario; applicants can better ensure the materials they submit reflect the skills and qualities graduate programs seek, while GEM professionals receive more pertinent information about their applicants and can therefore make more informed admission decisions. Our findings extend prior literature that associates postsecondary educational achievement and success outcomes with the Big 5 personality factor of conscientiousness (Kuncel et al., 2014; Noffle & Robbins, 2007; O'Connor & Paunonen, 2007; Poropat, 2009; Trapmann et al., 2007). In particular, the "proactive" (e.g., hard-working, persistent) aspect of conscientiousness, which aligns with perseverance, has been shown to be

## (Non)cognitive dissonance

predictive of undergraduate graduation outcomes and GPA (Burks et al., 2015). Yet more can be done to ensure that similar views are not merely artifacts of chance or of similar social and cultural perspectives. Despite consistent viewpoints between students and GEM professionals, barriers may prevent applicants from demonstrating the skills and qualities graduate programs value. For example, although 72% of students reported perseverance/resiliency as an important quality, 28% did not. While some students may be aware that qualities such as perseverance or resiliency are desirable, other students may not know which qualities to demonstrate or may be unsure how to best demonstrate those important qualities in their application materials. Since it is uncommon for graduate programs to explicitly state the noncognitive factors they evaluate, our findings are noteworthy given the (1) observed alignment between the skills and qualities students and GEM professionals deem important, and (2) misalignment between how each group perceives these skills and qualities are demonstrated. Yet, even where alignment occurs, students may attempt to express their qualities in ways that are unnoticed or unappreciated by reviewers. Future research should investigate potential group differences in these alignments as group differences across student demographic characteristics have potentially concerning implications for equitable access to graduate education.

If a quality such as perseverance/resiliency is important to many graduate programs, especially if it is used as a criterion to evaluate applicants, making this information publicly available to applicants would increase fairness. For example, specific information pertaining to the criteria, qualifications, and applicant qualities a graduate school or program expects or finds important for success among qualified applicants should be explicitly stated on graduate admissions and program webpages (Sotelo et al., 2023). Such practices can increase transparency, benefiting applicants and graduate programs. A necessary first step toward enhancing transparency is for graduate programs to seek internal clarity and agreement about their own priorities. For example, program faculty members and administrators might engage in discussions about the skills and qualities they value most among students, especially when such skills and qualities are aligned with the institutional or programmatic mission. Once identified and operationally defined, programs can formalize how they plan to measure the skills and qualities within the materials applicants submit. One such approach is to confirm that personal statement prompts align with the skills and qualities that the program values and intends to measure using a given application component. For example, if a program intends to learn about an applicant's resiliency, the personal statement prompt should be structured in a way that allows applicants to describe their experiences overcoming adversity. Using a rubric, as recommended by the Council of Graduate

## (Non)cognitive dissonance

Schools (Kent & McCarthy, 2016), is another best practice that can help promote more consistent evaluations of admissions applications. Aligning priorities and strategy in a principled manner could not only increase internal consistency in how candidates are evaluated but could also increase transparency and fairness through greater equality of access to information and mitigate the deleterious effects of hidden curriculum (Roland & Bukoski, 2024; Margolis & Romero, 1998). Additionally, the emergence of Artificial Intelligence (AI) presents potential opportunities to enhance consistency and efficiency in evaluating applicants' personal qualities, but "may inadvertently penalize already disadvantaged subgroups when used in high-stakes settings" (Lira et al., 2023, p. 1).

Increasing transparency is a step toward equity, as members of underrepresented minority groups often lack access to informational resources on graduate school admissions, contributing to disparate admissions outcomes (Roland & Bukoski, 2024; Woo et al., 2022). In the absence of clear signals from graduate programs, applicants may make assumptions about the relative

importance of various skills based on their own cultural background and values (Chari & Potvin, 2019) which could differ from what graduate programs value. For example, a student may choose to emphasize a skill such as organization which may not be deemed as highly important by a graduate program as the student assumes from their own background and experiences.



**"Our findings highlight the importance of efforts to enhance the alignment between graduate admissions criteria and evaluative methodologies and how applicants demonstrate their personal skills and qualities through the components of their application."**

Our findings highlight the importance of efforts to enhance the alignment between graduate admissions criteria and evaluative methodologies and how applicants demonstrate their personal skills and qualities through the components of their application. Explicitly stating to prospective students how GEM professionals plan to evaluate a key personal quality such as perseverance/resiliency

or responsibility/self-discipline is an important next step. Through their application pages, graduate schools or programs could make clear to prospective students that a given quality is evaluated through letters of recommendation or through a personal statement. Explicitly articulating the qualities and skills that are important to a given graduate program and informing

## (Non)cognitive dissonance

prospective students how their application materials demonstrate those qualities would allow prospective students to focus on the information graduate programs consider when preparing their admissions materials (Sotelo et al., 2023) and could improve the validity of those instruments (see Kuncel et al., 2014). Providing guidance about what the school or program considers among the non-academic credentials it seeks could help to offset some of the advantage that high-income students typically have in demonstrating these characteristics (Chetty et al., 2023). Articulating the skills and qualities that are important to a graduate program would also signal to applicants that skills and qualities not listed are of lesser importance or may not be considered. Doing so would help prevent applicants from focusing their efforts on demonstrating strengths that may be unimportant to or not considered by their intended graduate program. For example, prospective students may prepare application materials that highlight their even-temperedness or sociability. However, those traits may not be highly desired by their intended graduate program. Similarly, if it is made explicit in the application instructions how graduate programs expect applicants to demonstrate certain skills or qualities, prospective students could avoid the mistake of assuming that they have sufficiently demonstrated those skills or qualities elsewhere in their application. Furthermore, providing more information about the personal qualities and skills that are valued by a graduate program could benefit

applicants by helping them determine the extent to which a given program values their strengths (Sotelo et al., 2023). Providing this information can benefit graduate programs as well as students. For example, institutions may attract prospective students who might not otherwise have applied, but whose self-conceptions of their strengths or values align with those valued by the program (Sung & Yang, 2008).

Graduate programs wishing to reduce subjectivity and bias in the admissions process could also consider alternatives to learning about students' noncognitive attributes through traditional application packet components such as personal essays or letters of recommendation, which are not particularly strong predictors of graduate school performance (Kuncel et al., 2014; Miller et al., 2021; Rosinger et al., 2021; Woo et al., 2022). These components may also be biased against underserved populations (Chetty et al., 2023). Institutions may consider alternative measures such as a direct skills assessment of desired noncognitive attributes. Measures of noncognitive attributes typically have smaller score gaps across racial and ethnic groups than other measures such as cognitive tests, while contributing to the prediction of success in educational settings (Kalsbeek et al., 2013; Klieger et al., 2022; Sackett et al., 2001). Although coaching or faking can be a concern in such assessments, a direct assessment of noncognitive attributes using a forced-choice method may offset such concerns across various graduate school contexts (e.g., see Kyllonen & Tan, 2022a;




## (Non)cognitive dissonance

Kyllonen & Tan, 2022b; Kyllonen & Tan, 2022c). With the role of noncognitive attributes in graduate admissions only likely to increase in the future, it is crucial that graduate schools and programs carefully consider how to incorporate the consideration of those attributes into their admissions processes in a principled way. Now, more than ever, is a time for graduate programs to take care regarding issues of equity in admissions.

### Limitations

Our study is limited by the nature of our samples. Both our surveys may be subject to self-selection bias. In the case of the GEM professionals survey, an invitation to complete the survey was sent to all NAGAP members, and those who are particularly interested in test-optional or holistic admissions may have been more likely to respond and who may have a different profile from the population of NAGAP members. Similarly, to ensure the demographic and geographic representativeness of our student sample, we recruited student participants through a crowd-sourcing platform. Students who agreed to participate in research studies through the platform also self-selected to participate in our study. Therefore, our samples may differ from the general population in terms of factors such as their motivation, limiting the generalizability of our results. Future research could use a random sampling technique to mitigate the potential effects of self-selection bias.

In our analyses, we did not examine subgroup differences, which may obscure our results, particularly if operational definitions of personal skills and qualities differ across demographic characteristics (e.g., gender, ethnicity, age, ability, race), type of graduate program (e.g., MBA vs. Ph.D.), or student intended graduate program. Future research can address this limitation by collecting in-depth demographic data on participants supporting subgroup analysis to determine if any groups are at a particular disadvantage in the current admissions environment. Research determining if and how expectations differ by field would further help guide prospective graduate students as they navigate the admissions process.

Finally, in an effort to maintain the readability of our survey, we did not provide participants with operational definitions of the PSQ components, but instead relied on their own interpretations of the terms. This is not uncommon in survey research, but given the nature of these terms, there may be imprecisions; these interpretations may have varied between participants, which could affect our findings. This study aimed to explore how different stakeholder groups valued these skills and qualities, and where they believed these skills and qualities were expressed in the graduate application. Future research should explore the notions of what these skills entail, as well as why and how they are believed to contribute to student success. It may also consider other skills and qualities that may be of interest to graduate programs but were excluded from our analysis, such as critical thinking. 

### REFERENCES

- Bastedo, M. N., Bowman, N. A., Glasener, K. M., & Kelly, J. L. (2018). What are we talking about when we talk about holistic review? Selective college admissions and its effects on low-SES students. *The Journal of Higher Education*, 89(5), 782–805. <https://doi.org/10.1080/00221546.2018.1442633>
- Bleemer, Z. (2023). Affirmative Action and Its Race-Neutral Alternatives. *Journal of Public Economics*, 220. <https://doi.org/10.1016/j.jpubeco.2023.104839>
- Burks, S. V., Lewis, C., Kivi, P. A., Wiener, A., Anderson, J. E., Götte, L., DeYoung, C. G., & Rustichini, A. (2015). Cognitive skills, personality, and economic preferences in collegiate success. *Journal of Economic Behavior & Organization*, 115, 30-44. <https://doi.org/10.1016/j.jebo.2015.01.007>
- Chari, D., & Potvin, G. (2019). Understanding the importance of graduate admissions criteria according to prospective graduate students. *Physical Review Physics Education Research*, 15(2), 023101. <https://doi.org/10.1103/PhysRevPhysEducRes.15.023101>
- Chetty, R., Deming, D., & Friedman, J. (2023). Diversifying society's leaders? The determinants and causal effects of admission to high selective private colleges (No. w31495). National Bureau of Economic Research.
- Darolia, R., Ptochnick, S., & Menifield, C. (2014). Assessing admission criteria for early and midcareer students from a U.S. MPA program. *Education Policy Analysis Archives*, 22, 1-17. <https://doi.org/10.14507/epaa.v22.1599>
- Dunlap, K., Henley, H., & Fraser, M. (1998). The relationship between admissions criteria and academic performance in an MSW program. *Journal of Social Work Education*, 34(3), 455-464. <https://doi.org/10.1080/10437797.1998.10778939>
- Haviland, S. B., Walker, M., Cho-Baker, S., Zhitong, Y., & James, K. (2022). Test-optional admissions practices in the COVID-19 era. (Research Notes). ETS.
- Haviland, S. B., Paris, J. H., Gooch, R. M., & Sotelo, J. (2023). What's now and what's next in graduate admissions policies: Results from the ETS/NAGAP 2022 Admissions Survey. (Research Notes). ETS.
- Hatchett, G. T., Lawrence, C., & Coaston, S. C. (2017). Re-examination of traditional admissions criteria in predicting academic success in a counselor education program. *International Journal for the Advancement of Counseling*, 39, 70–81. <https://doi.org/10.1007/s10447-016-9283-6>
- Kalsbeek, D., Sandlin, M., & Sedlacek, W. (2013). Employing noncognitive variables to improve admissions, and increase student diversity and retention. *Strategic Enrollment Management Quarterly*, 1(2), 132-150.
- Kent, J. D., & McCarthy, M. T. (2016). Holistic review in graduate admissions: A report from the council of graduate schools. Council of Graduate Schools.
- Klieger, D.M., Bochenek, J., Ezzo, C., Holtzman, S., Cline, F., & Olivera-Aguilar, M. (2022). Using third-party evaluations to assess socioemotional skills in graduate and professional school admissions. *International Journal of Testing* 22(1), 72-99. [10.1080/15305058.2021.2019748](https://doi.org/10.1080/15305058.2021.2019748)
- Klieger, D. M., Cline, F. A., Holtzman, S. L., Minsky, J. L., & Lorenz, F. (2014). New perspectives on the validity of the GRE® General Test for predicting graduate school grades (GRE Research Report No. GRE-14-03). Princeton, NJ: Educational Testing Service.
- Knox, L. (2023, July 28). NACAC acquires character collaborative. Inside Higher Ed. <https://www.insidehighered.com/news/quick-takes/2023/07/28/nacac-acquires-character-collaborative>
- Kuncel, N. R., Kochevar, R. J., & Ones, D. S. (2014). A meta-analysis of letters of recommendation in college and graduate admissions: Reasons for hope. *International Journal of Selection and Assessment*, 22(1), 101-107. <https://doi.org/10.1111/ijsa.12060>
- Kuncel, N. R., Hezlett, S. A., & Ones, D. S. (2001). A comprehensive meta-analysis of the predictive validity of the graduate record examinations: Implications for graduate student selection and performance. *Psychological Bulletin*, 127(1), 162-181. <https://doi.org/10.1037/0033-2909.127.1.162>
- Kuncel, N. R., Wee S., Serafin, L., & Hezlett, S. A. (2010). The validity of the graduate record examination for master's and doctoral programs: A meta-analytic investigation. *Educational and Psychological Measurement*, 70, 340-352. <https://doi.org/10.1177/0013164409344508>
- Kyllonen, P. C. (2008). The research behind the ETS personal potential index (PPI). (ETS Research Brief Series). ETS. <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=5dd2d8d1510b605975dfc27dc16e632043e5168e>
- Kyllonen, P. C. & Tan, A. (2022a). PSQ pilot validity report: Health sciences program. ETS.

## (Non)cognitive dissonance

- Kyllonen, P. C. & Tan, A. (2022b). PSQ pilot validity report: Business school. ETS.
- Kyllonen, P. C. & Tan, A. (2022c). PSQ pilot validity report: Law school. ETS.
- Kyllonen, P. C., Walters, A. M., & Kaufman, J. C. (2005). Noncognitive constructs and their assessment in graduate education: A review. *Educational Assessment, 10*(3), 153-184.
- LeCrom, C., Rufer, L., Slavich, M., Dwyer, B., & Greenhalgh, G. (2016). Exploring predictors of graduate school and career success: A case study in sport management. *College Student Journal, 50*, 513-530.
- Lira, B., Gardner, M., Quirk, A., Stone, C., Rao, A., Ungar, L., ... & Duckworth, A. L. (2023). Using artificial intelligence to assess personal qualities in college admissions. *Science Advances, 9*(41), eadg9405. <https://doi.org/10.1126/sciadv.adg9405>
- Liu, O. L., Klieger, D. M., Bochenek, J. L., Holtzman, S. L., & Xu, J. (2016). An investigation of the use and predictive validity of scores from the GRE® revised General Test in a Singaporean university (GRE Research Report No. GRE-16-01). Princeton, NJ: Educational Testing Service. <https://doi.org/10.1002/ets2.12095>
- Margolis, E., & Romero, M. (1998). "The department is very male, very white, very old, and very conservative": The functioning of the hidden curriculum in graduate sociology departments. *Harvard Educational Review, 68*(1), 1-33. <https://doi.org/10.17763/haer.68.1.1q3828348783j851>
- Michel, R. S., Belur, V., Naemi, B., & Kell, H. J. (2019). Graduate admissions practices: A targeted review of the literature. ETS research report series, 2019(1), 1-18.
- Miller, A., Crede, M., & Sotala, L. K. (2021) Should research experience be used for selection into graduate school: A discussion and meta-analytic synthesis of the available evidence. *International Journal of Selection and Assessment, 29*(1), 19-28.
- Niessen, A. S. M., Meijer, R. R., & Tendeiro, J. N. (2017). Measuring non-cognitive predictors in high-stakes contexts: The effect of self-presentation on self-report instruments used in admission to higher education. *Personality and Individual Differences, 106*, 183-189.
- Noftle, E. E., & Robins, R. W. (2007). Personality predictors of academic outcomes: Big five correlates of GPA and SAT scores. *Journal of Personality and Social Psychology, 93*(1), 116. <https://doi/10.1037/0022-3514.93.1.116>
- O'Connor, M. C., & Paunonen, S. V. (2007). Big Five personality predictors of post-secondary academic performance. *Personality and Individual Differences, 43*(5), 971-990.
- Okahana, H., Augustine, R. M., & Zhou, E. (2018). Master's admissions: Transparency, guidance, and training. Washington, D.C.: Council of Graduate Schools.
- Pacheco, W. I., Noel, R. J., Porter, J. T., & Appleyard, C. B. (2015). Beyond the GRE: Using a composite score to predict the success of Puerto Rican students in a biomedical PhD program. *CBE Life Sciences Education, 14*(2), ar13. <https://doi.org/10.1187/cbe.14-11-0216>
- Paris, J. H. (2021). An exploration of institutional motivations for holistic graduate admissions. *Perspectives, 33*(3) 3-5.
- Paris, J. H., Beckowski, C. P., & Fiorot, S. (2023). Predicting success: An examination of the predictive validity of a measure of motivational-developmental dimensions in college admissions. *Research in Higher Education, 1-26*. <https://doi.org/10.1007/s11162-023-09743-w>
- Paris, J. H., Birnbaum, M., & Dix, N. (2024). Selecting students: Graduate admissions criteria and evaluation methodologies. In J. H. Paris & S. J. Kania (Eds.), *A comprehensive guide to graduate enrollment management: Advancing research and practice* (pp. 72-91). Routledge.
- Paris, J. H., Haviland, S., & Gooch, R. (2024). The graduate admissions experience: College seniors' perspectives on the application process. In J. H. Paris & S. J. Kania (Eds.), *A comprehensive guide to graduate enrollment management: Advancing research and practice* (pp. 55-71). Routledge.
- Paris J. H., & Winfield J. D. (2024). Exploring institutional rationales for holistic review in graduate admissions. *Strategic Enrollment Management Quarterly, 11*(4), 39-54.
- Patterson, F., Knight, A., Dowell, J., Nicholson, S., Cousans, F., & Cleland, J. (2016). How effective are selection methods in medical education? A systematic review. *Medical Education, 50*(1), 36-60. <https://doi.org/10.1111/medu.12817>
- Poropat, A. E. (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological Bulletin, 135*(2), 322. <https://doi.org/10.1037/a0014996>

## (Non)cognitive dissonance

- Roland, E., & Bukoski B. E. (2024). Challenging the hidden curriculum of personal statements in graduate admissions: A developmental approach. In J. H. Paris & S. J. Kania (Eds.), *A comprehensive guide to graduate enrollment management: Advancing research and practice* (pp. 207-219). Routledge.
- Rosinger, K. O., Sarita Ford, K., & Choi, J. (2021). The role of selective college admissions criteria in interrupting or reproducing racial and economic inequities. *The Journal of Higher Education*, 92(1), 31-55.
- Sackett, P. R., Schmitt, N., Ellingson, J. E., & Kabin, M. B. (2001). High-stakes testing in employment, credentialing, and higher education: Prospects in a post-affirmative action world. *American Psychologist*, 56(4), 302-318.
- Salisu, I., Hashim, N., Mashi, M. S., & Aliyu, H. G. (2020). Perseverance of effort and consistency of interest for entrepreneurial career success: Does resilience matter? *Journal of Entrepreneurship in Emerging Economies*, 12(2), 279-304.
- Schwager, I. T., Hülshager, U. R., Bridgeman, B., & Lang, J. W. (2015). Graduate student selection: Graduate record examination, socioeconomic status, and undergraduate grade point average as predictors of study success in a western European university. *International Journal of Selection and Assessment*, 23, 71–79. <https://doi.org/10.1111/ijsa.12096>
- Sotelo, J., Gooch, R. M., Cho-Baker, S., Haviland, S. B., Kell, H. J., Ling, G., & Liu, O. L. (2023). An exploration of admissions-related practices from institutions' admissions web pages and implications for equity. *Strategic Enrollment Management Quarterly*, 11(2), 19-29.
- Sowbel, L. R., & Miller, S. E. (2015). Gatekeeping in graduate social work education: Should personality traits be considered? *Social Work Education*, 34, 110–124. <https://doi.org/10.1080/02615479.2014.953046>
- Students for Fair Admissions, Inc. v. University of North Carolina, 142 S. Ct. 896 (U.S. 2022).
- Students for Fair Admissions v. Harvard College, 261 F. Supp. 3d 99 (D. Mass. 2017).
- Sung, M., & Yang, S. U. (2008). Toward the model of university image: The influence of brand personality, external prestige, and reputation. *Journal of Public Relations Research*, 20(4), 357-376. <https://doi.org/10.1080/10627260802153207>
- Trapmann, S., Hell, B., Hirn, J. O. W., & Schuler, H. (2007). Meta-analysis of the relationship between the Big Five and academic success at university. *Zeitschrift für Psychologie/ Journal of Psychology*, 215(2), 132-151.
- U.S. Census Bureau. (2019, February 21). Number of master and doctoral degrees doubles among population. <https://www.census.gov/newsroom/press-releases/2019/education-degrees-double.html>
- Walpole, M., Burton, N. W., Kanyi, K., & Jackenthal, A. (2002). Selecting successful graduate students: In-depth interviews with GRE® users. *ETS Research Report Series*, 2002(1), i-29.
- Ward, N. (2007). The (un)predictability of computer science graduate school admissions. *Communications of the ACM*, 50(3), 104–106. <https://doi.org/10.1145/1226736.1226772>
- Woo, S. E., LeBreton, J. M., Keith, M. G., & Tay, L. (2022). Bias, fairness, and validity in graduate-school admissions: A psychometric perspective. *Perspectives on Psychological Science*, 18(1) 3-31. <https://doi.org/10.1177/174569162111055374>

## (Non)cognitive dissonance

### APPENDIX Skills and Qualities Drawn from PSQ Tool

Noncognitive Attribute	Description
Organization	Organization refers to behaviors associated with punctuality, organization, and systematicity in work style.
Leadership	Leadership refers to behaviors associated with comfort in expressing opinions, leading, and being in charge in social contexts.
Creativity	Creativity refers to behaviors associated with coming up with new ideas and original solutions and enjoying engaging in unconventional thinking
Curiosity	Curiosity refers to behaviors associated with seeking out opportunities to learn and having varying interests.
Collaboration	Collaboration refers to behaviors associated with getting along with others and being a mediator or facilitator in group settings.
Even-temperedness	Even-Temperedness refers to being calm, level-headed, and good at regulating and navigating emotions even in stressful situations.
Sociability	Sociability refers to behaviors associated with comfort in approaching others and being interested in meeting new people.
Responsibility	Responsibility refers to behaviors associated with loyalty, respecting obligations, and commitments, and being relied upon as a team member.
Self-discipline	Self-Discipline refers to maintaining focus, completing tasks, and considering options before deciding.
Perseverance	Perseverance refers to behaviors associated with diligence, ambition, hard work, goal striving, and proficiency.
Resiliency	Resiliency refers to internal psychological adjustment, a steady mood, and avoidance of worry even after negative feedback

Adapted from Kyllonen & Tan, 2022c.