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Assessing Admission Criteria for Early and Mid-Career Students: Evidence from a U.S. MPA Program

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Abstract: As applications for graduate and professional degree programs have reached unprecedented levels over the past decade, the applicant pool has become more diverse with more mid-career students deciding to return to school. Given the growth and diversification of the graduate applicant pool, many graduate programs are struggling to develop stronger admission package criteria that assure students admitted to their program have the pre-requisite skills needed to succeed. We examine which commonly used graduate admission criteria, particularly the Graduate Record Exam (GRE), correlate with the academic performance of both early and mid-career professional students. Using data from student files from a southeastern U.S. graduate public administration program, we find that the GRE score, undergraduate grade point average, and type of undergraduate institution are good predictors of graduate performance, but that the value of these admission criteria differs for early and mid-career students.

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La evaluación de los criterios de admisión para estudiantes principiantes y en la mitad de la carrera profesional: Evidencia de un Programa MPA en los EE.UU.

Resumen: Las aplicaciones para los programas de posgrado han alcanzado niveles sin precedentes en la última década, el número de solicitantes se ha vuelto más diverso, con más estudiantes en la mitad de sus carreras profesionales tomando la decisión de regresar a la universidad. Dado el crecimiento y la diversificación del grupo de solicitantes de postgrado, muchos programas de están luchando para desarrollar criterios de admisión de más fuertes que aseguren los estudiantes admitidos en sus programas tienen las habilidades y pre-requisitos necesarios para ser exitosos en sus estudios. Examinamos los criterios de admisión de posgrado comúnmente utilizados, en particular el Graduate Record Exam (GRE), y como se correlacionan con el rendimiento académico de los estudiantes, tanto principiantes como los profesionales a mitad de carrera. El uso de datos de los archivos del estudiante de un programa de administración pública de posgrado de del sudeste Estados Unidos, encontramos que la puntuación de GRE, el promedio de las notas y el tipo de institución de pregrado son buenos predictores para el desempeño en posgrado, pero que el valor de estos criterios de admisión difieren para estudiantes principiantes y estudiantes a mitad de carrera.

Palabras clave: Estudiantes adultos; Posgrado; Criterios de admisión.

A avaliação dos critérios de elegibilidade para alunos iniciantes e na metade da carreira profissional: Evidências de um Programa MPA nos EUA

Resumo: As inscrições nos programas de pós-graduação alcançaram níveis sem precedentes na última década, o grupo de candidatos tornou-se mais diversificado, com mais alunos no meio das suas carreiras profissionais tomando a decisão de voltar para a faculdade. Dado o crescimento e diversificação do grupo de candidatos de pós-graduação, muitos programas estão procurando desenvolver critérios de aceitação mais rigorosos para assegurar que os estudantes aceitos em seus programas tinham as habilidades e pré-requisitos necessários para ser bem sucedidos em seus estudos. Foram examinados os critérios de admissão de pós-graduação comumente utilizados, especialmente o Graduate Record exam (GRE), e como eles se relacionam com o desempenho acadêmico dos alunos, novatos e dos profissionais em meio das carreiras. Usando dados dos estudante de um programa de pós-graduação da administração pública do sudeste dos Estados Unidos, descobrimos que GRE, a média das avaliações e do tipo de instituição de graduação são bons indicadores de desempenho em pós-graduação mas o valor destes critérios de admissão são diferentes para alunos iniciantes e alunos em meio de carreira profissional.

Palavras-chave: Alunos adultos; Pós-graduação; Critérios de admissão.

Introduction

Earning a Master's or professional degree has become more popular than ever among students of all ages and career stages. The application rate for graduate programs has increased almost five percent per year between 1999 and 2009 (Council of Graduate Schools, 2012). One driver of this increased demand is due to mid-career professionals deciding that “[i]t’s time to go back to school” (Loftus, 2012). Doubling their size since 1987, graduate students aged 40 and over made up about 1 out of every 4 students enrolled in graduate school in 2007 (Council of Graduate Schools, 2012). Mid-career professionals are deciding to return to school for a variety of reasons (Loftus, 2012). For some, a graduate degree is simply required in order to obtain salary increases or promotions. Others hope that a graduate degree will help them ‘stay relevant’ in a rapidly changing technological world, while others plan to shift careers completely in order to obtain a more

economically stable or personally gratifying position. No matter the reason, some graduate school sectors, such as law, are targeting mid-career students as a way to address enrollment shortfalls (Neil, 2013). While mid-career students are diverse in terms of age, work background, and years of experience, they are distinct from their early-career student counterparts, most of whom enter graduate school immediately or shortly after completing their undergraduate degree. Because mid-career students have been out of school for a longer period of time (five or more years), graduate schools assume that they benefit from valuable knowledge and practical experiences but also face challenges related to family and work-life disruptions (Loftus, 2012).

Although this growth in demand for graduate degrees is beneficial for graduate programs, it also creates challenges. Of particular interest for this study is the concern that commonly used admissions criteria, such as standardized tests, may not reflect the abilities and skills of the burgeoning mid-career professional applicant pool. Many mid-career working professionals have differing skill sets and academic needs than early-career students who enroll in graduate programs shortly upon graduation from a bachelor's degree. For example, some researchers find that the quantitative section of the Graduate Record Examination (GRE) is particularly disadvantageous to mid-career students unless they have had the opportunity to maintain their mathematics skills following their baccalaureate program (Clark, 1984; Hartle, Baratz, & Clark, 1983). Moreover, since most mid-career students have been out of the academic setting for years, some students view having to take these types of standardized tests as an admissions obstacle (Baird, 1987).

As a result of this increased and diversified applicant pool, graduate and professional programs are struggling to develop strong admission criteria to assure that students of all backgrounds admitted to their program have similar academic expectations and skills to be successful in their pursuit of the degree. Research, however, has yet to fully examine which admission criteria are related to the academic success of mid-career students. Studies that have focused on graduate admission criteria and academic success either have not distinguished between early and mid-career students or have only examined one aspect of the admission package (usually standardized test scores) when comparing early and mid-career students (Gibson, Leavitt, Lombard, & Morris, 2007; Kuncel, Wee, Serafin, & Hezlett, 2010; Leavitt, Lombard, & Morris, 2011; Menifield et al., 2007). As a result, no research (of which we are aware) has comprehensively examined whether commonly used admission criteria for graduate programs are equally valid for early and mid-career students.

So how should graduate programs evaluate mid-career students, and how do commonly used admissions standards relate to the academic performance of early and mid-career students? We provide evidence on these questions by examining which commonly used admission criteria best correlate with student success for both early and mid-career professional students from a southeastern U.S. Masters of Public Administration (MPA) program. Graduate programs in the public administration field rank among America's top ten most popular graduate degrees (Council of Graduate Schools, 2012), and similar to other graduate programs are increasingly attracting mid-career professionals (Loftus, 2012). Some MPA programs have waived the requirement of graduate entrance exam scores for specific categories of mid-career applicants who have demonstrated management experience in the public or nonprofit sector (Gibson et al., 2007; Menifield et al., 2007). Instead, these programs often consider other factors such as work experience and portfolios.

Using data from students' files in the Department of Public and Nonprofit Administration at a Network of Schools of Public Policy, Affairs, and Administration (NASPAA) accredited university in the southeast from the 1993 summer semester through the 2011 fall semester, we provide new evidence of the relationship between admission criteria and mid-career and early-career student success. We place special emphasis on the GRE given that it is commonly used among admissions committees and because traditional measures of academic ability, such as GRE scores, may be less

useful for predicting the success of mid-career students than for students who more recently finished undergraduate studies. Addressing the latter issue even further, we assess performance of mid-career students who obtained a waiver from taking the GRE because of other vocational credentials. We provide a background on commonly used admission criteria in MPA and other graduate programs, and discuss research on the effectiveness of these criteria. Given the growth in mid-career professional students, this analysis aims to provide evidence on the relationship between admission standards and student success for early and mid-career students.

Admission Criteria and Student Success

It is reasonable to expect graduate programs to utilize the best available criteria in making admission decisions. In setting these standards, graduate schools should encourage only those students who are likely to succeed to apply and enroll in a graduate program. Brink (1999) argued that graduate programs are more likely to be successful in this admission process when the mission and objectives of the program are clearly delineated, when the prerequisites required to meet the objectives are met, and when techniques and measures are developed to determine when those prerequisites are met.

Assessing the probability of student success can be challenging, and therefore graduate program admission staff typically employ a number of indicators to make admissions decisions. Factors that are commonly used include: undergraduate grade point averages; personal statements; interviews; letters of references; selectivity of undergraduate institution; undergraduate major; standardized graduate admission exams (e.g., GRE, Millers Analogies Test [MAT], Graduate Management Admission Test [GMAT]; and the Test of English as a Foreign Language [TOEFL]).

However, there is a body of literature that questions the efficacy of these factors in predicting success in graduate programs. The validity and reliability of institutional ratings has been challenged as a predictor of graduate school and career success (Edwards, 1935; Pascarella & Terenzini, 2005). Undergraduate grade point average, a more commonly used criteria, has received an array of reviews. It is often used as an admit/no admit factor in graduate admission decisions. Though recent studies find a positive association between undergraduate GPA and graduate school performance (Halberstam & Redstone, 2005; Leavitt et al., 2011; Menifield et al., 2007; Ragothaman, Carpenter, & Davies 2009), past studies highlight the limitations of undergraduate GPA. One of the chief flaws in using undergraduate grade point average is measurement error (Humphreys, 1968; Warren, 1971; Werts, Linn, & Joreskog, 1978). Smith (1992) argues that grade inflation is one possible factor for this incongruity, which thus limits the value of the variable as a predictor of graduate school success. Despite this limitation, Bowman, Chen, Tinkersley, and Hilliard (1993) found that 40% of MPA programs surveyed used undergraduate grade point average as the key factor in admission decisions. This finding is consistent with current trends (Leavitt et al., 2011) and earlier research (Bowman, 1988) that showed most MPA program administrators believed undergraduate grade point average was the best predictor of graduate school success. Bowman et al. (1993) also found that the GRE scores were the most important factor for 35% of the programs although 20% deemed letters of reference as the most important factor. Lastly, they found that 54% of all MPA programs rely solely on one of the two factors (usually the GRE score or grade point average) and ignore the remaining factors. When a single factor was used, grade point average was more commonly used (Bowman et al., 1993).

Success in undergraduate programs, however, may not necessarily signal success in graduate school. Brink (1999), for example, noted that some students who excelled in their undergraduate studies often under achieve in graduate school due to a variety of reasons, including, "poor health, lack of interest, insufficient time for study, or other reasons" (p. 522). Other students who may have

been deemed marginal at admission because of relatively poor undergraduate records can excel through hard work or may find better success in a graduate program that focuses on a specific set of topics rather than a broad undergraduate program. Older and mid-career students, moreover, may gain maturity as they age or augment other “soft skills,” such as organizational ability and responsibility, through work experience.

In sum, current evidence suggests that a small number of variables are used in making admissions decisions—GRE scores and undergraduate GPA. Although a large number of programs view the undergraduate grade point average as the most salient factor in admission decision, the results are certainly not conclusive. An alternative option is for admission programs to rely more on GRE scores, but as we highlight below, research does not conclusively demonstrate that GRE scores are a better predictor of graduate success.

The GRE Debate

The GRE is one of several standardized exams that graduate schools around the country use in making admission decisions. According to Education Testing Services (ETS), the purpose of the exam is to measure: quantitative reasoning, verbal reasoning, and analytical writing and critical thinking skills that are not specific to any particular undergraduate major or field of study. Although the structure of the exam and mode of delivery has changed over time, the overall goals have remained consistent. Moreover, to ensure continuity across these changes, ETS provides information on the compatibility of previous scores to new scores once changes occur. Ideally, this continuity ensures that GREs scores remain a consistently useful tool for graduate departments.

There is an extensive literature that has both supported and questioned the predictive validity of quantitative data gathered from tests such as the GRE, MAT, and GMAT (Brink, 1999; Clark, 1984; Hartle et al., 1983; House, 1994; Kuncel & Hezlett, 2010; Kuncel et al., 2010; Oldfield & Hutchinson, 1996; Sampson & Boyer, 2001; Sireci & Talento-Miller, 2006; Sternberg & Williams, 1997; Zwick, 1993). Although ETS suggests that GRE test scores can be interpreted in such a way as to provide an adequate indicator of graduate students’ likelihood of success, the evidence is not conclusive (Kuncel & Hezlett, 2007; Kuncel et al., 2010; Milner, McNeil, & King, 1984). For MPA programs specifically, Bowman (1988) concluded from an examination of NASPAA accreditation studies that the “GRE is not a powerful predictor of success since it delivers an average accuracy or percentage of perfect prediction of 11.9 percent for first year graduate school grades” (p. 867). However, he did note that the GRE was in fact comparable to other admission factors such as undergraduate grade point average and letters of recommendation.

Providing support for the predictive validity of GRE scores, Menifield et al. (2007) studied the achievement of graduate students in an accredited MPA program. By comparing students who had received waivers for admission into the graduate program, they found that the type of undergraduate university, GRE score, and the substantive contributions to class discussions had a significant impact on the writing skills of the graduate student. Given that writing skills are a key component to success at the graduate level, their research suggests that the GRE is a valid predictor of student success. This MPA specific study reflects research done by Bridgeman, Burton, and Cline (2008) on a broader set of graduate programs. Using two sets of data on over 4,000 graduate students, the authors found that students who achieved in the top quartile of GRE scores of those studied were 3 to 5 times more likely to achieve a 4.0 grade point average than those students in the bottom quartile during their first semester as graduate students. Other research suggests that the predictive value of the GRE for student success holds for both minority and non-minority students (Sireci & Talento-Miller, 2006), and across gender, though the effect size is larger for females (House, 1994).

Several studies, however, suggest the GRE and other standardized tests have limited predictive ability of graduate school success. For example, Cushing and McGarvey (2004) argue that the effectiveness of the GRE or the GMAT has never been firmly established and that these entrance exams have surprisingly little predictive ability. Hansen (1971) found little correlation between GRE scores and graduate GPAs in economics programs, and Sternberg and Williams (1997) found similar evidence in psychology programs. Another study conducted by the GRE Board of Education Testing Services (1988) found only small correlations between first-year graduate GPA and GRE scores. Other studies report that GRE scores explain only 6% to 16% of the variance in first year GPA (Goldberg & Alliger, 1992; Ji, 1998; Morrison & Morrison, 1995).

Some of the mixed evidence on the predictive validity of GRE scores and other standardized test scores may reflect the fact that the objectives of a graduate program differ across academic degrees and academic departments (Kuncel et al., 2010). Consequently, the information about student ability that the GRE scores measure may be more relevant for some degree programs and for some types of students. As a result, the ETS recommends not using their standardized scores as the sole criterion for admission (King, Bruce, & Gilligan, 1993). Therefore, it is important to understand the correlates of GRE scores, as well as other commonly used admission criteria for different types of students and programs. In this study, we examine the specific effectiveness of the GRE score in a public administration program as compared to other commonly collected admission criteria.

Data

In order to determine which admission criteria are most related to MPA student success, we follow prior studies (Gibson et al., 2007; Leavitt et al., 2011; Menifield et al., 2007) and collect data from the files of MPA students who graduated during the Spring 1993 through Fall 2011 semesters at a southeastern U.S. NASPAA accredited MPA program. Our sample includes a total of 223 students who graduated with the MPA degree during this period and only includes students who were accepted to and graduated from the program. As our outcome measure, we measure student success by using overall GPA in the program—a commonly used indicator for student performance in prior research (Kuncel et al., 2010).

In our analysis, we group students into three mutually exclusive groups, early-career students who took the GRE, mid-career students who took the GRE, and students (mostly mid-career) who obtained a waiver for the graduate admission exam requirement. Students with less than five years of professional experience at time of program entry were defined as early-career students, with mid-career students having at least five years of experience. Work experience is defined as years of professional experience related to the public affairs field broadly defined at the time of admittance into the program. Students could petition for a test waiver if they met the selected criteria, such as having relevant job experience or accomplishments, being an undergraduate from the same institution who satisfied certain undergraduate GPA and course requirements, passing a waiver course, serving in the military, or possessing another graduate degree (see Menifield et al., 2007) for a more detailed explanation). Therefore, although the test waiver indicates some level of demonstrated performance by the student, these students had a variety of professional and academic backgrounds. About 23% of students in our sample obtained a waiver.

To assess the relative importance of the different admission criteria for each of these groups of students, we focus on the most commonly used and most objective admission criteria—GRE test scores, undergraduate GPA, undergraduate institution selectivity, and undergraduate major (Bowman, 1988; Kuncel et al., 2010; Leavitt et al., 2011). Although reference letters and submission essays are also frequently used, these admission criteria are limited in reliability. Given their

subjective nature, admission officers even within the same program may assess these criteria differently and therefore we do not include them.

For the GRE test score, we use the composite score of the verbal and quantitative portions of the test. We do not consider the analytical section of the test since it changed from a multiple choice format to writing format in 2002 making it difficult to compare this section of the test over time. Undergraduate GPA is based on a 4.0 scale and collected from student transcripts. We classify the selectivity of students' undergraduate institutions using the Carnegie Foundation's (2010) standard listing of undergraduate profiles. Undergraduate student test scores at "more selective" institutions are approximately in the top fifth of institutions, "selective" institutions have test scores that place them in the middle two-fifths of institutions, and "inclusive" institutions (reference group) have test scores that indicate less stringent admissions requirements. International students are included in a separate group. Lastly, we create an indicator for whether the student's undergraduate degree was in public administration or political science because these students are more likely to directly have the pre-requisite credentials and knowledge that could lead to academic success in an MPA program.

Analysis

We begin by analyzing how student profiles differ between types of students to assess whether early and mid-career students enter their degree program with different educational backgrounds and skill sets. We then assess the correlation between GRE and overall GPA, a common metric employed in analyses of the predictive validity of entrance exams. This provides a relative measure of the strength of the relationship between the two factors. We next use linear regression to examine how much of the variation in GPA is explained by GRE and conditional on other factors available to admission committees (Wooldridge, 2003). We run these regressions for all students and then for early and mid-career students separately. This allows us to assess the relative relationship between admission criteria and academic achievement. Finally, we examine the GPAs of students who obtained a GRE waiver, in an effort to understand whether these students have different academic performance than those who did not receive the GRE waiver. Because the vast majority of these waiver students are mid-career professionals, this analysis provides preliminary evidence as to whether the GRE is valuable for predicting mid-career students' success or if a waiver option is sufficient.

Relationships between GPA and GRE

After assessing the correlation coefficient between GPA and GRE, we next examine the relationship between GPA and GRE with and without controls for other observable admission criteria that could affect students' academic performance. We estimate the following equation:

$$(1) \quad GPA_i = \alpha + \beta GRE_i + \eta X_i + Yr_i + \varepsilon_i$$

Here, i indexes student, GPA is overall GPA earned in the program, GRE is GRE composite score, Yr is a vector of indicators for the year the student finished the program, ε is the error term, α is the intercept, and β is an estimated parameter. X is a vector of included controls, as detailed below, with parameter vector η . We estimate Equation 1 using three sets of explanatory variables. First, we use an unadjusted GRE model. In this model, we do not include any controls for other admission criteria beyond GRE (i.e., X is an empty set), such that the estimated parameter of interest, β , can be interpreted as the relationship between GPA and GRE accounting only for differences over time. Second, we use an adjusted GRE model. In this model, we include in X factors admissions officers would be able to observe and choose to judge applicants: undergraduate GPA, years of professional

experience, selectivity of undergraduate institution based on Carnegie classification, and an indicator for applicants having an undergraduate major in political science or public administration. Hereafter, we call this model the “adjusted” model, and can interpret the estimated parameter of interest, β , as the relationship between GPA and GRE after accounting for factors that program administrators can observe at time of admissions and for which they may choose to judge applicants. Third, we use an adjusted model without GRE. In this model, we do not include the GRE as an independent variable in an effort to understand the how well GPA can be explained by the remaining variables. This could be of particular interest for a program that is considering eschewing the GRE as a determinant of admission into the program.

Relationships between GPA and Waiver

Starting in 2001, students in the program examined could apply for a GRE waiver based on their undergraduate GPA and years of professional experience. To analyze the relationship between the waiver option and GPA, we estimate the following equation:

$$(2) \quad GPA_i = \alpha + \beta Waiver_i + \eta X_i + Yr_i + \varepsilon_i$$

The model here is the same as described in Equation 1, but we include an indicator for whether or not the student waived the GRE requirement as an explanatory variable instead of a GRE score. The parameter of interest, δ , provides an estimate of the marginal difference in GPA among those who obtain a waiver status and those who do not, controlling for selected covariates.

Limitations

Our study has a number of limitations. First, because the data used in this study comes from one MPA program, generalized inferences should be regarded with caution. However, it is notable that many graduate and professional programs use similar admission factors, thus these results and conclusions may be useful in determining where emphasis should be placed. Additionally, results from the estimations reflect associations and should not be considered as evidence of causal evidence between the independent and dependent variables. Program GPA, moreover, is only one way to measure success in a graduate program. While we focus on this measure, we recognize that other outcomes, such as job acquisition, starting salary, leadership in the program, or academic integration, are important indicators of academic success. Prior research, however, suggests that GPA (the most widely used measure of student performance) is strongly associated with many of these post-school performance indicators, including higher salaries and lower student debt (Kuncel et al., 2010; Thomas, 2000). Lastly, because we only examine students already admitted to the program the GRE and other admission criteria may have already served their purpose by eliminating students not likely to be successful in the program at all. Our analysis only indicates how these different admission criteria relate to student success for those students admitted to the program. Nevertheless, our results may inform how these factors might be used to determine admitted students eligibility for scholarships, grants, and research opportunities. Moreover, by knowing which admission factors correlate to student success, program chairs and faculty can use our results to assess which students admitted to their program may need additional support systems to be successful.

Results

To assess how the educational backgrounds of early and mid-career students compare, we first display summary statistics of our sample in Table 1 for all students and by student subgroup. Statistically significant differences from the early-career group are denoted by asterisks in the mid-career and waiver columns. Mid-career students graduated from the MPA program with similar

GPA to early-career students, and waiver students had the lowest MPA GPAs of the three groups. As would be expected, both the mid-career and waiver students had many more years of professional experience (9-10 years) than did early-career students (almost 1.5 years on average), but these groups also took longer to complete the program, likely in part because these students were more likely to attend part-time. The sample overall was predominantly female and White, though the waiver group was comprised of mostly Black/African American students. Waiver students were more likely to come from less selective institutions, and similar to the mid-career students, favored the public management program concentration as compared to the early-career students.

Table 1
Sample Summary Statistics

Characteristic	All Students (n = 223)	Early-Career (n = 118)	Mid-Career (n = 51)	Waiver (n = 54)
	Mean			
MPA GPA	3.62	3.65	3.65	3.55*
GRE Score	979	986	962	N/A
Years Professional Experience	5.32	1.45	9.24*	10.07*
UG GPA	3.01	3.04	3.01	2.93
Semesters to completion	7.56	7.24	7.47	8.35*
	% of Students ^a			
GRE Waiver	24%			
White	53%	63%	63%	22%*
African American/Black	47%	37%	37%	78%*
Male	35%	32%	45%	30%
Female	65%	68%	55%	70%
	Carnegie Classification of Undergrad Institution			
Inclusive	12%	10%	6%	22%*
Selective	68%	69%	71%	63%
More Selective	17%	18%	22%	11%
N/A (International)	3%	3%	2%	4%
	MPA Program Concentration			
General	23%	22%	18%	30%
Non-profit	20%	23%	22%	11%*
Public Management	27%	17%	29%*	48%*
Human Resources	17%	21%	16%	11%
Health	13%	17%	16%	0%*

Note: Data are administrative records of graduates from a MPA program.

^a These demographic variables are not included in our regression models because graduate admissions committees are not allowed to consider them in the admissions decision. We provide them, however, to provide descriptive context about our sample.

* $p < 0.10$ difference between mid-career or waiver students as compared to early-career students, using a t-test for the continuous variables and a Pearson's chi-squared test for the categorical variables.

To examine the relationship between GRE and MPA GPA, we present correlation coefficients in Table 2. Correlations are bounded between negative one and one, with values closer to one indicating a large positive correlation, values closer to negative one indicating a large negative correlation, and values closer to zero indicating no correlation. Since waiver students did not take the GRE, no value is displayed for this group. The correlation between GRE and MPA GPA is lower for mid-career as compared to early-career students. This supports the belief that the GRE reflects the skill set of entering students with longer professional records less well than those who enter earlier in their career.

Table 2
Correlation Between GRE and GPA

Student Group	Correlation
All Students	0.29
Early-Career Students	0.33
Mid-Career Students	0.17

Note: Data are administrative records of graduates from a MPA program.

Next, we use regression analysis to assess how valuable the GRE is in comparison to other admission criteria for students overall and for early and mid-career students separately. Table 3 presents results from estimations of GPA from the three models previously described. We first assess the relative importance of each admission criteria for all students, since some programs do not distinguish between early and mid-career students. In the first column, we present the relationship between GPA and GRE accounting only for differences over time for the pooled group of students. Here, we find that every 10-point increase in GRE score is associated with a small (0.005), but statistically significant increase in GPA. With a standard deviation of GRE score in the sample of approximately 160 points, this suggests that graduates with a one standard deviation higher GRE scores had higher GPAs of approximately 0.8 points on a 4.0 scale.

When adding additional factors that admission officers could observe and take action upon at time of admission in the second column, we find a generally consistent result of a positive relationship between GPA and GRE for all students. Specifically, we find that each 10-point increase in GRE is associated with a 0.003 point increase in GPA, after controlling for factors that we would expect to positively affect MPA GPA, undergraduate GPA and selectivity of school. Undergraduate GPA is strongly positively associated with MPA GPA, as is going to a more selective undergraduate college (the omitted group for school classifications is inclusive schools, such that coefficients for school selectivity can be interpreted as higher average MPA GPAs for students from these schools as compared to average MPA GPAs from students who attended inclusive undergraduate institutions, holding other factors in the model constant). Interestingly, each marginal extra year of professional experience and having a political science or public administration undergraduate major is not statistically significantly related to MPA GPA.

The third column removes GRE as an explanatory variable. Relationships between covariates and MPA GPA remain relatively consistent with results from the adjusted model, though with larger magnitudes. This suggests that if a program did not require a GRE score that other admission criteria would compensate for some (but not necessarily all) of the lost information provided by the GRE. We can also compare coefficients of determinations (R-squared) from the models to get a sense of how important the GRE is in explaining variation in GPA, after controlling for professional experience and undergraduate GPA, major, and institution selectivity. The R-squared provides a measure of the proportion of total variation in MPA GPA that is explained by the model (Wooldridge, 2013). We see a very small decline in R-squared from the adjusted model to the adjusted model without GRE (~0.02). Thus, the amount of GPA variation that the GRE accounts for in addition to the other factors may be considered practically rather small in magnitude. To examine the extent of collinearity among GRE and other factors in the adjusted model, we display the GRE variance inflation factor (VIF; Wooldridge, 2013). The VIF is 1.32, which suggests a low level of collinearity between GRE and other predictors. We see similar relationships when comparing these models for early-career and mid-career students separately, though the amount of variation explained by the GRE beyond other factors for mid-career students is smaller than that for early-career students.

Given the differing educational backgrounds observed between mid- and early-career students, it is plausible that different admission criteria may be more useful for predicting the success of one group over another. To test this hypothesis, we provide estimations for early and mid-career students separately (displayed in the fourth through ninth columns). We observe that the GRE has a stronger association with the MPA GPA for early-career students than for mid-career students, and after controlling for available factors, the GRE is not a statistically significant explanatory factor for mid-career students (eighth column). Interestingly, though we see a greater ability for included covariates to explain total variation in the MPA GPA for mid-career students as measured by the R-squareds, we also observe a relative decline in the size of the coefficients of individual covariates. Additionally, we see the precision of the estimates decline in the mid-career student estimations (as evidenced by larger standard errors of estimates), though this could be partly a function of the smaller sample size. Our findings therefore reinforce the notion that traditional signals of applicant quality become less clear as students get further removed from undergraduate studies.

Table 3
Estimations of GPA and GRE

Parameter	All Students (n = 169)			Early-Career Students (n = 118)			Mid-Career Students (n = 51)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
GRE Score / 10	0.005*** (0.001)	0.003** (0.001)		0.006*** (0.002)	0.004** (0.002)		0.003* (0.002)	0.002 (0.002)	
Years Prof. Experience		0.005 (0.004)	0.005 (0.004)		0.029 (0.018)	0.025 (0.018)		0.012 (0.010)	0.012 (0.009)
UG GPA		0.231*** (0.045)	0.256*** (0.045)		0.234*** (0.059)	0.263*** (0.058)		0.194* (0.096)	0.200** (0.095)
PS/PA UG Major		-0.026 (0.050)	-0.028 (0.051)		-0.042 (0.059)	-0.051 (0.060)		-0.064 (0.129)	-0.043 (0.126)
CC: Selective		0.270*** (0.072)	0.316*** (0.070)		0.232*** (0.086)	0.280*** (0.085)		0.207 (0.187)	0.228 (0.184)
CC: More Selective		0.240*** (0.084)	0.299*** (0.081)		0.199* (0.102)	0.258** (0.100)		0.249 (0.211)	0.290 (0.203)
CC: N/A (Internat.)		0.425*** (0.144)	0.460*** (0.145)		0.452** (0.174)	0.488*** (0.176)		-0.069 (0.377)	-0.019 (0.370)
Intercept	3.161*** (0.126)	2.442*** (0.200)	2.606*** (0.189)	3.067*** (0.162)	2.484*** (0.258)	2.698*** (0.242)	3.321*** (0.198)	2.417*** (0.432)	2.568*** (0.389)
R-squared	0.085	0.411	0.389	0.102	0.451	0.425	0.056	0.636	0.626
GRE VIF		1.32			1.39			1.77	

Note: Table includes regression coefficients with standard errors in parentheses underneath. Model 1 is the unadjusted model; Model 2 is the adjusted model; and Model 3 is the adjusted model without GRE. All models control for graduation year, but coefficients for these variables are not displayed. VIF = variance inflation factor; CC = Carnegie Classification; PS/PA UG Major = Political Science or Public Administration undergraduate major. Data are administrative records of graduates from a MPA program.

p < 0.10. ** p < 0.05. *** p < 0.01

Waivers for Mid-Career Students

Given that our results indicate that GRE scores are a less strong indicator of grades for mid-career students when accounting for other admissions criteria, we assess whether allowing a waiver option for these students is a good policy. Though the GRE score may not predict student success beyond other admission criteria, there may still be a value to having mid-career students take the GRE test.

Table 4 displays the relationship between MPA, GPA, and GRE waiver for students who graduated in the year 2001 or later. When considering all students using the unadjusted model, students who obtain waivers have lower MPA GPAs of approximately 0.13 points (first column), but we find no statistically significant differences for mid-career students (third column). When accounting for differences in the adjusted model, we do not find statistically significant differences among students who waived their GRE requirements, as compared to those who did not, on average. These results suggest that there may be some negative selection into waiving the GRE, but other observable admissions characteristics (e.g., undergraduate GPA, institution selectivity) explain much of this variation. Coupling this result with our previous result that the GRE score did not predict student success for mid-career students, our overall results suggest that the waiver option for mid-career students may be a good option for programs, though it should be noted that we find fewer viable predictive criteria for this group.

Table 4
Estimations of GPA and Waiver

Parameter	All Students (n = 148)		Mid-Career and Waiver Students (n = 86)	
	Model 1	Model 2	Model 1	Model 2
GRE Waiver	-0.132*** (0.046)	-0.081 (0.052)	-0.066 (0.059)	-0.035 (0.060)
Years Prof. Experience		-0.003 (0.004)		-0.003 (0.005)
UG GPA		0.190*** (0.044)		0.105 (0.065)
PS/PA UG Major		0.014 (0.057)		0.016 (0.085)
CC: Selective		0.240*** (0.061)		0.173** (0.085)
CC: More Selective		0.303*** (0.078)		0.325*** (0.107)
CC: N/A (International)		0.392*** (0.137)		0.296* (0.165)
Intercept	3.678*** (0.028)	2.857*** (0.177)	3.612*** (0.046)	3.333*** (0.259)
R-squared	0.053	0.347	0.015	0.389

Note: Table includes regression coefficients with standard errors in parentheses underneath. Model 1 is the unadjusted model; Model 2 is the adjusted model. All models control for graduation year, but coefficients for these variables are not displayed. CC = Carnegie Classification; PS/PA UG Major = Political Science or Public Administration undergraduate major. Data are administrative records of graduates from a MPA program.

** p < 0.05. *** p < 0.01.

Conclusion

We began our study by posing several questions that address admission criteria commonly used in graduate and professional program admissions. More specifically, our objective is to provide evidence on the relationship between student academic success, as measured by GPA, GRE and other admission criteria for early and mid-career students. Our analysis does in fact show that the GRE, undergraduate grade point average, and type of undergraduate institution are correlated with academic performance, but that the value of these admission criteria differs for early and mid-career students.

For all students, no matter their career stage, we find that undergraduate GPA is the strongest and most consistent predictor of student success. However, we also find that undergraduate institutional selectivity matters, suggesting that graduate programs should also consider where the student matriculated at the undergraduate level. We find some evidence that GRE test scores are related to student success, though the effect is relatively small in comparison to the predictive value of undergraduate GPA. Thus, the GRE requirement does add some value to the admission package, as suggested by prior research (Bridgeman et al., 2008; Kuncel et al., 2010; Menifield et al., 2007). However, given that other literature suggests that the GRE and other standardized test scores discriminate based on race, gender, and age (Gibson et al., 2007; Sampson & Boyer, 2001), program admission officers may want to weigh the benefits of the relatively small added value of the GRE against the diversity costs that may accompany a GRE requirement.

Interestingly, we do not find any evidence to suggest that years of professional experience or undergraduate major have an impact on graduate grade point average for mid-career or early-career students. The non-significant association between years of professional experience and GPA suggests that admission officers should use caution when considering work experience in lieu of other admission criteria. For some students, mid-career in particular, admission officers will often waive GRE and GPA requirements provided that students demonstrate extensive professional experience (Gibson et al., 2007; Menifield et al., 2007). Our results suggest that years of professional experience is not sufficient. Instead, admission officers may need to focus more on the quality and type of professional experience acquired.

Given the increasing demand of mid-career students and the extensive efforts made by graduate and professional programs to cater to this growing population, there is need to better understand the educational backgrounds of this population in order to develop admission criteria most relevant for them. Overall, our results suggest that the educational backgrounds of early and mid-career students differ significantly, though this variation in background does not necessarily equate to diverging achievement trends. On average graduate GPA does not differ for early and mid-career students, despite the fact that mid-career students display lower qualifications on several admission criteria, including GRE scores and lower undergraduate GPA. Mid-career students, however, are more likely to have graduated from a more selective undergraduate institution. Thus, to the extent that selective institutions have more rigorous standards for determining student GPAs, the lower undergraduate GPA observed among mid-career students may partially reflect differences in undergraduate institution attended rather than differences in their academic ability. This result further highlights the need for admission officers to consider the type of undergraduate institution attended rather than just overall undergraduate GPA.

Our results further suggest that MPA programs may want to develop different admission packages, particularly in terms of GRE requirements, for early and mid-career students. While the GRE test score provides some indication of student success for early-career students beyond the information provided by other admission criteria, we find no similar effect for mid-career students.

For mid-career students who took the GRE, undergraduate GPA is the only statistically significant predictor of student success. Similar to early-career students, each marginal year of professional experience does not predict higher levels of GPA for mid-career students. Given that mid-career students come from wide varying backgrounds and work histories (e.g., career path changers, career advancers, or stay-at-home parents seeking to return to their careers), admission packages for this group may be more effective if they included information about the skills they have acquired from their vocational experiences, rather than just time worked. Moreover, our results suggest that the admission package should still consider the foundational skills mid-career students acquired during their undergraduate training (as measured by undergraduate GPA).

One option professional programs frequently adopt to recognize the value of professional experience is to waive the GRE for mid-career students. Our results provide support for this policy but also warrant caution. Mid-career students who receive a waiver for the GRE in our program demonstrate the lowest graduate GPA scores and the lowest pre-program qualifications of all students (early and mid-career) as evidenced by their lower undergraduate GPAs, GRE scores, and undergraduate institutional selectivity. Once we account for these lower pre-program academic qualifications, though, students who receive a GRE waiver perform as well as students who do not receive a waiver. Thus, mid-career students who receive a GRE waiver can be successful, but admissions officers need to make sure that their other qualification indicators are strong enough to ensure their success.

In sum, our results reinforce the notion that graduate and professional programs need to create strong admission package criteria to ensure the success of a growing and diversifying graduate student population. Although undergraduate GPA is the most salient factor in the admission decision for most programs, our results suggest a more comprehensive admission package that includes the selectivity of the undergraduate institution and GRE scores is needed to best ensure student success. Moreover, one standard admission package may not be sufficient. Given the dramatic increase in mid-career professionals returning to school after decades in the workforce, professional and graduate admission committees need to start developing admission criteria that more accurately reflects the skills set of this growing student population.

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