Research Report

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RESEARCH REPORT

Factors Considered in Graduate School Decision-Making: Implications for Graduate School Application and Acceptance

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The career gains of obtaining a graduate degree are well established, but those from lower socioeconomic status (SES) and underrepresented demographic backgrounds have persistently been disadvantaged in earning those degrees. We aim to contribute to research on enhancing access, diversity, and equity to graduate education by providing insights into what motivates individuals to pursue a graduate education across demographic and socioeconomic backgrounds. Using survey data collected from *GRE*® test takers at two time points and exploratory structural equation modeling, we explore the factors that individuals consider to be important for pursuing graduate education and selecting graduate programs, along with subsequent application and acceptance outcomes. We identified three factors considered in deciding to pursue graduate school and six factors considered in selecting graduate school programs. Those who aimed to apply to graduate school for professional development considered an extensive set of factors in selecting programs. The factors considered varied by gender, ethnicity/race, and SES. These factors further varied in the extent to which they predicted graduate school application and acceptance outcomes.

Keywords Graduate school decision-making; graduate school application; graduate school acceptance; diversity; exploratory structural equation modeling

The career gains (e.g., higher annual earnings, higher rates of obtaining a professional occupation; de Brey et al., 2021; Schneider & de Alva, 2018) associated with obtaining a graduate degree are well established. Accordingly, the proportion of the U.S. workforce that has attained a graduate degree has grown since the 1990s (de Brey et al., 2021), and about one third of employers have increased their positions' educational requirements from 4-year to master's degrees (Dishman, 2016). Sixty-four percent of graduate students in the United States think a graduate degree is the new educational minimum to be considered a professional (Sallie Mae, 2017). Nonetheless, attending graduate school entails time and financial costs: 77% of graduate students pay for graduate school from their own earnings or by borrowing money (Sallie Mae, 2017), and although some full-time intensive master's degree programs take only a year to complete, part-time programs or more advanced graduate degrees (e.g., Ph.D.) can take 5 years or longer (Soriano, 2019). As a consequence, those from a lower socioeconomic status (SES) or underrepresented ethnic/racial backgrounds have persistently been disadvantaged in participating and completing graduate school, especially in doctoral and professional education (Posselt & Grodsky, 2017). In response to this issue, enhancing diversity has become a critical theme in many higher educational institutions (Center for Social Solutions, n.d.). We aim to contribute to research on enhancing access to and equity in graduate education by providing insights into what motivates individuals to pursue a graduate degree across demographic backgrounds and how that relates to their graduate school application and acceptance outcomes.

A number of studies examine factors associated with graduate school choice. Some primarily focus on ranking the important factors, focusing on institutional characteristics (e.g., Bersola et al., 2014; Poock & Love, 2001), whereas other work statistically classifies themes regarding the considerations that shape graduate school pursuits, mainly concentrated on social cognitive factors (e.g., Borrego et al., 2018). However, the majority of extant research on graduate school choice relies on a confined pool of respondents, such as those who were already accepted to (e.g., Bersola et al., 2014; Kallio, 1995) or enrolled in (e.g., Poock & Love, 2001; Saeed et al., 2008) a graduate program. Moreover, although extensive research has identified the significant demographic and socioeconomic characteristics that predict graduate school enrollment

outcomes, there is a substantial lack of research that explores the psychological considerations that impact graduate school choice and how they may vary across individual backgrounds. Filling this gap will help further explain the internal processes that may connect individuals' contextual backgrounds to their pursuit of a graduate education.

The current study builds on Kallio's (1995) work that classified the institutional factors considered important in making graduate school enrollment decisions using exploratory factor analysis (EFA) and explored those factors' associations with enrollment outcomes. We extend their approach in several respects. First, we fill an important gap in the existing literature by following a sample of those who have intentions to pursue graduate school—*GRE*® test takers—instead of focusing on accepted or enrolled students. This allowed us to explore the association between factors considered in choosing to apply to graduate school and individuals' later application and acceptance outcomes. Next, we applied Hossler and Gallagher's (1987) three-step college choice model, which differentiates the sequential steps involved in making educational choices classifies the factors considered in (a) applying to and (b) selecting graduate school programs, and explored associations among them. We used an innovative approach (exploratory structural equation modeling [ESEM]), which is ideal for exploring new psychological constructs with limited theoretical grounding while also modeling the structural associations between latent constructs and other variables (Marsh et al., 2014). Finally, we compared the factors considered important for a graduate education across gender, ethnicity/race, and SES. Our findings will aid graduate programs in developing effective recruitment strategies to attract prospective students from diverse demographic and motivational backgrounds who are considering pursuing graduate school.

Factors of Graduate School Choice

Compared to the extensive literature focusing on undergraduate college choice processes, the literature treating graduate school choice is fairly limited (Poock & Love, 2001). Of the few exceptions, Hossler and Gallagher's (1987) model of college choice, initially developed to explain the transition from high school to college, has been applied to studies of graduate school choice (e.g., Bersola et al., 2014; Poock & Love, 2001). In Hossler and Gallagher's three-step choice model, the first step refers to forming intentions to seek a graduate degree, the second step refers to seeking potential programs to apply to, and the final step is to apply to institutions and ultimately select which one to enroll in. The college choice model also discusses some individual (e.g., student educational activities and values) and organizational (e.g., school characteristics) factors that influence students' choices in each of the three steps.

Grounded in Hossler and Gallagher's (1987) work, Bersola et al. (2014) examined the institutional characteristics that individuals place importance on when choosing a doctoral institution to enroll in and compared whether these differ between enrollees and nonenrollees within an accepted pool of students. They found that institutional characteristics such as availability of childcare, low cost of living, institutional/program reputation, and fellowship status were more important for enrollees compared to nonenrollees. Using a nationwide sample of doctoral program enrollees, Poock and Love (2001) explored the most important institutional factors reported by students and showed that personal life factors such as closeness to home, ability to continue working at current jobs, and flexible program requirements were the most important factors considered in general, with their level of importance being pronounced among part-time versus full-time students. Financial factors such as amount of stipend, opportunity for assistantship, and (low) cost were considered more important for full-time compared to part-time students.

Other studies classify graduate school pursuit factors using EFA. For example, Borrego et al. (2018) developed 23 five-point Likert scale items based on Social Cognitive Career Theory (SCCT; Lent et al., 1994, 2005), which proposes three cognitive mechanisms (self-efficacy, outcome expectations, interests) and other social support factors that are important in guiding career development. They conducted an EFA and identified five factors (self-efficacy, outcome expectations, support, barriers, choice action) that may affect undergraduate students' decisions to attend graduate school. Similarly, González-Moreno (2012) developed items to capture the four subjective task value components (importance, interest, perception of usefulness, costs) of pursuing a graduate degree, based on Parsons et al.' (1984) expectancy-value model of achievement choice. Using confirmatory factor analysis, they were able to extract two factors: values (interests and importance combined) and costs. These studies provide a firm conceptual and methodological foundation for the current investigation, but are also focused primarily on social cognitive variables. Many other variables are obviously of great importance when individuals make decisions about their graduate educations.

The most relevant precursor to our study is Kallio (1995), which identified four factors (academic, work, spouse, social) through EFA, based on students' ratings of 31 institutional characteristics among accepted students in a major public

university. They found that all of these characteristics were positively associated with graduate school enrollment. Furthermore, the factor generated from work-related items (e.g., ability to continue current job) showed a stronger association with decisions to enroll among those who were less than 30 years old compared to older students. Our goal was also to identify the motivational factors that may lead individuals to pursue graduate school. However, we focused on a population that has developed intentions to apply (i.e., GRE test takers) and explored the factors' associations with graduate school application and acceptance outcomes, which are vastly underexplored outcomes in prior work.

Gender, Race/Ethnicity, Socioeconomic Status, and Graduate School Pursuits

Albeit indirectly, graduate school enrollment can be an indicator of the extent to which individuals are motivated to pursue graduate education. Related to this, a consistent line of research has examined the role of demographic factors, including gender, ethnicity/race, and family SES in shaping graduate school enrollment outcomes. Recent data indicate that women, compared to men, are more likely to enroll in graduate school in general (Nevill et al., 2007; Walpole, 2008) and in master's degree programs specifically (Nevill et al., 2007; Perna, 2004). Indeed, national data show that the number of female students entering postbaccalaureate programs has exceeded the number of male students since 1988, and the gap has increased (de Brey et al., 2021). However, men are more likely to be enrolled in graduate programs on a full-time basis and also show higher attainment rates compared to women (de Brey et al., 2021; Nevill et al., 2007).

Regarding ethnicity/race, underrepresented minority (URM) students are educationally disadvantaged in numerous ways. URM students are less likely to enroll in selective universities (Posselt et al., 2012) and have lower undergraduate grade point averages (GPAs) relative to their majority group peers (Gayles, 2012), and unfortunately, factors in which URM students exhibit indications of disadvantage are typically weighted heavily by graduate school admissions decision-makers (Jones et al., 2020; Posselt, 2016). URM students are also less likely to enroll in graduate school after being accepted (Bersola et al., 2014) and to attain a graduate degree after being enrolled (Nevill et al., 2007). The percentage of URM postbaccalaureate enrollees has risen since 2000 (e.g., African American/Black students' rate of growth from 2000 to 2010 = 4.3%; Hispanic students' rate of growth from 2000 to 2010 = 1.7%; de Brey et al., 2021). However, the rate of growth among the African American/Black students has dwindled since around 2010 (e.g., 2010–2018 = 0.2% de Brey et al., 2021), whereas the Hispanic students' rate of growth from remained a steady rise (2010 to 2018 = 3.75%; de Brey et al., 2021). Recent data from 2019 show that the percentage of African American/Black individuals in the pool of overall graduate student enrollees was between 12.5% (Okahana et al., 2020) and 13.9% (de Brey et al., 2021), similar to their share of the national population between the ages of 20 and 64 (13.3%; U.S. Census Bureau, 2020). However, if we focus on only the first-time enrollees, the share of the African American/Black students is smaller (11.8%). Hispanic students also remain underrepresented in the pool of both overall (10.9% [Okahana et al., 2020] to 11.2% [de Brey et al., 2021]) and first-time (11.6% [Okahana et al., 2020]) graduate school enrollees relative to their share of the national population (18.4%; U.S. Census Bureau, 2020). Moreover, URM students, including African American/Black students, are still notably underrepresented in science, technology, engineering, and mathematics (STEM) disciplines (National Science Foundation, 2019). A third distinct pattern in graduate school ethnic/racial composition is shown among Asian-American students, in that they are more likely to enroll in an advanced degree program (Nevill et al., 2007) and without working while being enrolled (Heller, 2001), compared to other racial/ethnic groups.

Consistent with evidence that family SES (e.g., education, income, assets) has positive implications for individuals' college attendance and completion (Kim & Sherraden, 2011), family SES indicators such as parental education and income have been shown to predict individuals' likelihood to attend graduate school either directly (Ekstrom et al., 1991; Heller, 2001; Nevill et al., 2007) or indirectly via their bachelor's degree receipt (Ethington & Smart, 1986). Additionally, Walpole (2008) showed that youth with low SES were less likely to be working on a degree beyond the master's level compared to youth with high SES.

As shown, there is an extensive literature that examines how individuals' backgrounds are related to their graduate school enrollment decisions. A more limited body of research investigates precursors that are associated with individuals' intentions to pursue graduate school, although it yields similar findings. This is not surprising, as intentions are often immediate antecedents of actions in the decision-making process (Ingram et al., 2000). For example, URM students and low-SES youth face more challenges in pursuing graduate school, with attendant implications for intending to apply to graduate programs. URM students face barriers such as excessive stress (Wei et al., 2011), low college or graduate school self-efficacy (i.e., beliefs in one's ability to perform academic tasks; Ojeda et al., 2011; Tate et al., 2015), and low college

outcome expectations (Ojeda et al., 2011), all of which negatively impact their attitudes and academic engagement in completing college (Ojeda et al., 2011; Wei et al., 2011) and pursuing a graduate degree (Tate et al., 2015). High-SES college students, relative to low-SES students, are more likely to plan to attend graduate school in their senior undergraduate year and aspire to obtain a doctoral degree; both variables predict actual graduate school attendance, even 5 years after their assessment (Walpole, 2008).

The studies reviewed, and those like them, demonstrate how gender, ethnicity/race, and SES are related to individuals' intentions to pursue graduate degrees. However, to begin to better understand why individuals form these intentions, more exploration is needed of how these precursors may be related to the criteria that individuals consider important when selecting and applying to graduate programs. We fill this gap by examining the factors considered in graduate school pursuit and comparing how the degree of importance for each factor varies by gender, ethnicity/race, and SES.

Current Investigation

The objective of the current study is similar to Kallio (1995) in that we seek to identify the factors that individuals take into account when making their graduate school decisions. However, we extend this prior research by using a sample of individuals who have intentions to apply to graduate school (GRE test takers) rather than relying on a restricted sample composed solely of individuals already accepted to a graduate program. Accepted and enrolled students do not include those who attempted but failed to gain admittance to a graduate program. Those already accepted may also have gained more information about the characteristics of the specific programs to which they had been accepted and thus may not provide accurate retrospective data of what they thought when they were making enrollment decisions.

We collected data when individuals tend to form strong intentions to pursue graduate school (when they took the GRE) but before they knew their application results and enrollment options. Applying the idea that initial motivations are formed prior to individuals deciding in which graduate program to enroll, we explored associations between two components of graduate school decision-making: *whether* to apply to graduate school and *where* to apply to graduate school. Additionally, we explored the role of the factors considered in two different graduate school pursuit indicators: number of graduate school applications and acceptances. These outcomes can show how the factors considered when individuals form strong intentions to pursue graduate school might shape their subsequent actions and, in turn, facilitate securing their opportunities to pursue a graduate education.

We had three major research aims. The first was to identify sets of factors that individuals consider when applying to graduate school in general and when choosing specific graduate programs. We also explored how these factors varied by gender, race/ethnicity, and SES. Our second aim was to explore how the factors motivating *whether* to apply to graduate school predict factors considered in *where* to apply to graduate school. Specifically and in accordance with the principles of the three-step college choice (Hossler & Gallagher, 1987) and SCCT (Lent et al., 2005) models—both of which posit that initial interest must be formed before an individual starts planning specific goals—we explored factors regarding two separate steps (i.e., formation of initial interest and specific action plans). Our final research aim was to investigate the implications of these factors for action outcomes. We investigated the associations between the factors individuals considered in graduate school, the number of graduate school applications they submitted, and the resulting acceptance outcomes, controlling for relevant covariates.

Method

Participants

Participants were recruited via email to complete a two-part online survey. We administered an online survey, and a $20 gift card incentive was offered for completion of each survey. We sent out recruitment letters for the first survey to approximately 20,000 domestic GRE test takers who had taken the test in October 2017 and had sent scores to graduate programs. They were contacted between November and December 2017, which was timed to coincide with application season for those who planned to enroll in fall of the following year. The email recruitment used a stratified sampling approach in order to construct a sample with equal representation of each of four major ethnic/racial groups (White, Asian, Black or African American, Latino). This survey focused on their demographic backgrounds and factors they considered important for applying to graduate school. A total of 1,472 participants completed the first survey (approximately a 7%

return rate), and all of them were contacted again via email to complete the second survey. The second survey was sent out in June 2018 after most students were expected to have made fall enrollment decisions. The second survey focused on individuals' graduate school application status, acceptance outcomes, and enrollment decisions.

Data from 985 individuals (5%) who participated in both surveys were used in our final analyses; 85.13% of those respondents later applied to graduate schools. Of those who applied, the average number of applications was 4.50 ($SD = 3.04$). The applicants were on accepted, on average, to 2.15 ($SD = 1.90$) programs. This sample consisted of primarily females (73%); however, the ethnicity of participants was well balanced between White (25%), Black (24%), Hispanic (25%), and Asian (25%). Within the sample, 25% applied for doctoral degrees only, and 57%, master's degrees only. The area of study the individuals pursued were STEM (44%), social sciences (22%), business (4%), education (7%), humanities (5%), and other fields (18%).

Measures

Factors Considered in Graduate School Decision-Making

Factors considered in making application decisions were captured by nine items asking the extent of influence that the items had on individuals' decision to apply to graduate school, focused on internal reasons that led them to consider graduate school as a next career option (e.g., "A friend was going to the school," "I thought my job prospects would be better").

Another set of factors were queried with regards to where to apply to graduate school. In order to gather a comprehensive set of items, we first adopted selective items from Kallio's (1995) study, excluding items that required students' close examination of a specific program and were considered as factors for enrollment rather than application decisions (e.g., quality of day-to-day campus life, admissions process and policies, quality of students enrolled in program, opportunities of friendship, interest of faculty in recruiting me). Then, we added additional items used in Bersola et al.'s (2014) and Poock and Love's (2001) study that reflected diversity and financial costs. Finally, we removed or combined some items that were redundant (e.g., library facilities and collections) and added additional items that were deemed to have impact on graduate school pursuits (e.g., recommendation/input from employer or colleague). Additional minor revisions were made in the statements to increase clarity.

A final set of 27 items were asked regarding the extent of influence each item had on individuals' choice of where to apply to graduate school. Both sets of items regarding factors considered in whether and where to apply were rated on a 5-point scale (from 1 = *not a factor* to 5 = *a significant factor*).

Graduate School Outcomes: Number of Graduate School Applications and Acceptances

In the second round of the surveys, individuals were asked to answer whether they applied to graduate school, followed by the number of applications. For the *number of graduate school applications*, we used a continuous variable ranged from 0 to 11 (more than 10). Those who applied to at least one school were directed to answer how many programs they were accepted to. This indicator was used for *the number of graduate school acceptances*, which ranged from 0 to 11 (more than 10).

Covariates

Covariates used in this study were six measures all collected from the first survey, consisting of three demographic and SES variables, one measure reflecting students' academic competitiveness, and two variables related to the graduate pursuit characteristics. For the demographic variables, we used gender (1 = *male*), ethnicity/race (i.e., White, Black, Hispanic, Asian), and SES. To capture family SES, we used a dichotomous item indicating whether the respondent participated in a free or reduced-price lunch program as a high school student. Based on its established positive association with individuals' likelihood to attend graduate school (Ekstrom et al., 1991; Ethington & Smart, 1986; Heller, 2001; Nevill et al., 2007; Walpole, 2008), we used individuals' undergraduate school grades to capture their academic performance. Given the nature of the survey, we asked an open-ended question about what the respondents thought was or would be their cumulative undergraduate GPA. Given the evidence that the factors individuals consider important differs by their graduate school characteristics (e.g., STEM versus non-STEM major; Eagan Jr. et al., 2013), we also included the type of degree

Table 1 Descriptive Statistics of Outcome and Predictor Variables (*N* = 985)

Variable	*M* or %	*SD*	Range
Graduate school outcomes			
Applied (yes = 1)	85.13%		
Number of applications	3.83	3.23	0 – 11
Accepted[a] (yes = 1)	84.45%		
Number of acceptances[a]	2.15	1.90	0 – 11
Covariates			
Gender (male)	26.65%		
Ethnicity/race			
White	24.97%		
Black	24.37%		
Hispanic	25.48%		
Asian	25.18%		
Free or reduced lunch	37.86%		
Undergraduate GPA	3.47	0.36	2 – 4
Degree pursued			
Doctoral only	25.41%		
Both master's and doctoral	17.48%		
Master's only	57.11%		
Field of study			
STEM	44.41%		
Social science	21.74%		
Humanities and arts	5.07%		
Education	6.63%		
Business	4.14%		
Other	18.01%		

Note. GPA = grade point average; STEM = science, technology, engineering, mathematics. [a] Based on a subsample of those who applied to graduate school.

individuals intended to pursue (i.e., master's only, doctoral only, both master's and doctoral) and whether or not they pursued a STEM major (1 = *yes*).

Descriptive statistics of the outcome measures and covariates are shown in Table 1.

Analyses

All analyses were conducted using *Mplus* version 8 (Muthén & Muthén, 2017). Of the predictors, the reduced lunch status had the highest missing rate of 19.29%, and the remaining variables had missing rates of 2% or lower. We used full information maximum likelihood (FIML) estimation in *Mplus* to treat missing data.

To address the first research question classifying the motivational factors regarding (a) whether to apply and (b) where to apply to graduate school, we used EFA, a widely used method for scale development that facilitates the creation of theory based on items that do not necessarily have a strong theoretical basis (Taherdoost et al., 2014). Although our items include several items used in Kallio's (1995) and other work, we did not replicate or confirm models based on previous research. This was because we used a limited selection of items used in prior studies, and also added a more extensive set of items regarding diversity.

We conducted two sets of EFAs to determine the number of factors to be extracted and the sets of items to be used in the final analyses. For each factor analysis, we decided the appropriate number of factors based on the scree plot test of the eigenvalues and Kaiser criterion that suggested retaining the number of factors that have eigenvalues above 1 (Kaiser, 1960; Yong & Pearce, 2013). We also used fit statistic differences to supplement our decision-making (Finch, 2020). We first followed a common rule of thumb of the cut-off values that indicate excellent fit for each fit index (i.e., RMSEA ≤ .05, CFI ≥ .95, TLI ≥ .95, SRMR ≤ .80; Clark & Bowles, 2018; Garrido et al., 2016). However, as pointed out by Clark and Bowles (2018), whereas the fit statistics can be used to detect underfactoring, they are completely unable to detect over-factoring, and this was consistent with our case (the fit statistics only became better as the number of classes increased; see Tables A1 and A2 in Appendix A). Therefore, we used minimum cut-off values for the ideal enhancement in fit indices

by increase in one number of class used by Finch (2020; i.e., RMSEA ≥ 0.015, CFI ≥ 0.01, TLI ≥ 0.01) as supplementary criteria to make our final decisions. We also eliminated items that had factor loadings that were lower than 0.32 on all items, which is a commonly used rule of thumb for minimum loadings based on Tabachnick et al.'s (2001) criterion. To compare the level of importance of the considered factors by gender, ethnicity/race, and SES, we used the linear factor score created based on the expected posterior distribution of the latent factors given the observed data.

Next, to answer the second and third research questions, which address potential associations (a) between the two motivational factors and (b) between all motivational factors and graduate pursuit outcomes, we used ESEM. ESEM is an optimal compromise between EFA and structural equation modeling (SEM) approaches (Marsh et al., 2014) as it allows for cross-loadings across all factors, as in EFA, but at the same time allows the researcher to explore the structural relations between latent constructs and other variables adjusted for measurement error (Marsh et al., 2014). Given that we investigated the associations between different sets of motivational constructs, we conducted a set-ESEM, a type of ESEM that models two or more sets of EFA constructs in a single model by allowing cross-loadings within a set of constructs, but restricting the factors loading to be zero across different set of constructs (Marsh et al., 2020). This allowed us to identify the two sets of motivational constructs that impact graduate school decisions as to whether to apply and where to apply. To address the second research question, focusing on the associations between the two sets of motivational factors, we rationally assigned directionality based on the sequence of the steps in the application process. To answer the third research question examining the association between individuals' motivational factors, number of applications, and number of acceptances to graduate school, we estimated the coefficients from an overall structural model predicting the number of graduate school acceptances and applications from the two sets of motivations, controlling for all covariates. The structural model used can be seen in Figure 3.

Results

Identification of Factors Considered in Graduate School Decision-Making

To address the first research question—identify the factors considered in (a) whether and (b) where to apply to graduate school—we conducted two separate sets of EFA models regarding each set of factors.

First, regarding factors of whether to apply to graduate school based on the nine survey items, we extracted three factors given the scree plot test, Kaiser criterion (Kaiser, 1960), and cut-off values for minimum improvement needed in fit indices used by Finch (2020). Of the nine items, one indicator had factor loadings lower than 0.32 on all factors ("I needed an advanced degree for professional reasons [e.g., promotions]") and was removed from the final analyses. We iterated the same EFA process and fit criteria using eight items and selected the three-factor model as our final model. The fit statistics of models with different numbers of factors extracted are shown in Table A1 in Appendix A.

The results of the first set of EFA are shown in Table B1 in Appendix B. The measurement model fit indices indicated good fit: RMSEA = .042 (90% CI [.020, 065]); SRMR = .016; CFI = .993; TLI = .972. Correlations among the latent factors for whether to apply are shown in Table 2. We labeled the first factor Professional Development, as the three items that significantly loaded on it mainly described individuals' interests in learning for professional reasons. The second factor, with three items, was labeled Alternative to Job, as it was represented by items suggestive of a relatively apathetic pursuit of a graduate education due to a lack of motivation or opportunities to pursue employment. The third factor was labeled To Enhance Job Prospects because the items loading highly on it concerned motivations to increase earnings and job prospects. Of the three factors, Professional Development consisted of items that ranked the highest in mean scores followed by To Enhance Job Prospects.

Concerning factors for where to apply, we used the same process and fit criteria as in the first set of EFA and extracted six factors using all 27 survey items. Of the 27 items, one item (size of program) was removed due to having loadings below .32 on all factors. After the second round of factor analyses, six factors were extracted with all 26 items having factor loadings of at least 0.32. The fit statistics are shown in Table A2 Appendix A, and results of the ESEM of the six motivational factors of where to apply to graduate school are in shown in Table B2 Appendix B. The fit indices indicated support for the measurement model: RMSEA = .053 (90% CI [.049, 057]); SRMR = .026; CFI = .976; TLI = .958. The first factor was defined as Recommendation, Access to Faculty Connections, and Funding, comprising five items describing recommendations from various sources, access to faculty, and availability of funding. The second factor was called Balance With Personal Life, Other Resources, which included five indicators related to location, work opportunities for self and the

Table 2 Correlation of the Motivational Factors

Factor	1	2	3	4	5	6	7	8
Whether to apply motivation								
1. Professional development								
2. Alternative to job	−.19							
3. To enhance job prospects	.46***	.10						
Where to apply motivation								
4. Recommendation, access to faculty, and funding								
5. Balance with personal life, and other resources				.16**				
6. Cost				.20***	.19***			
7. Reputation, quality, and connection to career				.47***	.15*	.47***		
8. Diversity				.53***	.18*	.39***	.58***	
9. Research opportunities				.29**	−.20*	.03	.33***	.30***

*$p < .05$. **$p < .01$. ***$p < .001$.

partner, and supporting resources. The third factor specifically concerned the cost of attending graduate school and was labeled Cost. The fourth factor was labeled Reputation, Quality, and Connection to Career, as the eight items loading on it concerned various topics reflective of program reputation and quality. The fifth factor was termed Diversity, given the four items loading on it were related to diversity and cultural opportunities. The final factor concerned Research Opportunities. In general, the reputation, quality, and connection to career factor consisted of items with relatively higher mean scores, and balance with personal life, other resources mostly comprised of items with the lowest mean scores.

Factors Considered in Graduate School Decision-Making by Gender, Race/Ethnicity, and Socioeconomic Status

Table 3 shows the results of the factor scores across gender. We note that the factor scores for each item are standardized values that resemble a z-score (ranging from approximately −3.0 to +3.0) based on each item's loading on specific latent factors. Refer to Appendix B for the mean scores of each item loaded primarily on each factor. Moreover, caution is needed when interpreting the findings of the factor scores with only two items (Enhance Job Prospects, $\alpha = .69$; Cost, $\alpha = .64$; Research Opportunities, $\alpha = .86$). Our results show that males ranked the professional development factor lower and alternatives to jobs higher than females as a reason to apply to graduate school. Regarding motivations to where to apply, females considered the following three factors more important than males: cost; reputation, quality, and connection to career; diversity. We also compared the factor scores by ethnicity/race (Figure 1) and found that among all ethnicity/race categories, Asian-Americans scored the alternative to job factor for whether to apply the highest. African American/Black respondents scored balance with personal life, other resources; cost; and diversity factors for where to apply the highest among all ethnicity/race groups. White respondents valued the diversity factor the least compared to individuals in all other ethnicity/race. Table 4 shows the factor scores by high school free/reduced lunch status. Compared to their counterparts, those who were enrolled in free/reduced lunch showed higher scores on the to enhance job prospects factor for whether to apply. Regarding where to apply factors, those who were enrolled in free/reduced lunch considered balance with personal life, other resources; cost; and diversity factors more important than their counterparts.
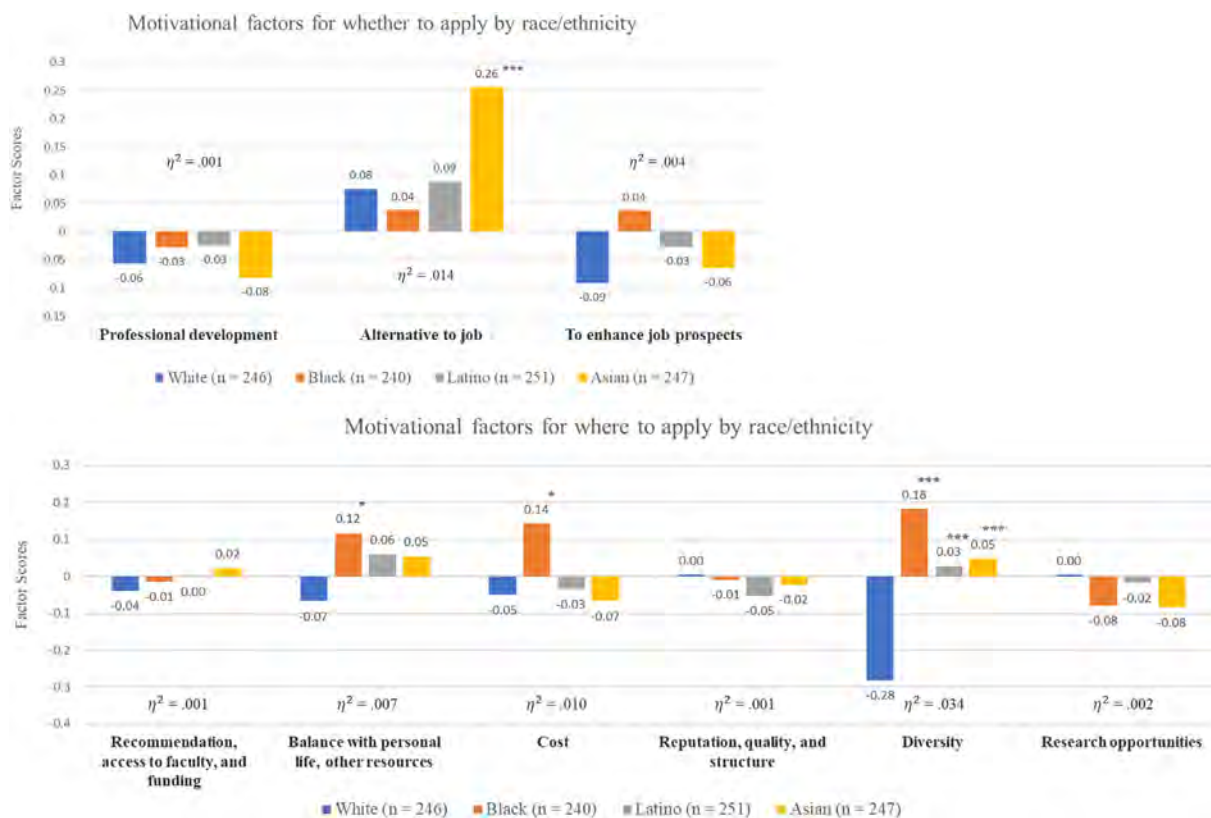
Associations Among the Factors Considered in Graduate School Decision-Making

Figure 2 shows the ESEM results for the postulated directional associations among the motivational factors for whether and where to apply to graduate school. The results show that the professional development factor was significantly and positively associated with all of the factors representing motivations for where to apply, except for the balance with personal life, other resources factor. Those who were more motivated to apply to graduate school as an alternative to other jobs were more likely to consider recommendations, access to faculty, and funding; balance in personal life, other resources; and diversity when selecting specific programs. The enhancement in job prospects factor in applying to graduate school was positively associated with factors related to balance in personal life in selecting graduate programs. However, the job prospect factor was negatively associated with the following factors for where to apply: recommendations and access to faculty and funding; diversity; and research opportunities.

Table 3 Mean Comparison of Motivational Factors by Gender

Factor	Male ($n = 259$), M (SD)	Female ($n = 713$), M (SD)	t	Cohen's d
Motivations to apply				
Professional development	−0.15 (0.65)	−0.01 (0.71)	−2.67**	.194
Alternative to job	0.23 (0.74)	0.07 (0.69)	3.17**	−.230
To enhance job prospects	−0.06 (0.78)	−0.03 (0.79)	−0.44	.032
Motivations to where to apply				
Recommendation, access to faculty, and funding	−0.08 (0.86)	0.02 (0.90)	−1.45	.105
Balance with personal life, and other resources	−0.01 (0.83)	0.07 (0.81)	−1.22	.088
Cost	−0.16 (0.78)	0.06 (0.85)	−3.62***	.262
Reputation, quality, and connection to career	−0.19 (0.86)	0.05 (0.93)	−3.62***	.263
Diversity	−0.25 (0.88)	0.08 (0.92)	−5.02***	.364
Research opportunities	0.02 (0.82)	−0.07 (0.82)	1.43	−.103

*$p < .05$. **$p < .01$. ***$p < .001$.

Figure 1 Factor Scores of Motivational Factors by Race/Ethnicity. *Note.* The asterisks denote the significance of the beta coefficients predicting the factor scores with White being the reference group.
*$p < .05$. **$p < .01$. ***$p < .001$.

Associations Among Factors Considered in Graduate School Decision-Making and Graduate School Outcomes

Figure 3 displays the results concerning how the factors considered in graduate school pursuit predict graduate school application and acceptance outcomes. First, none of the factors considered in whether to apply predicted the number of applications and acceptances. However, four factors regarding where to apply significantly predicted the number of graduate school applications. Balance with personal life, other resources and cost factors were both negatively associated with the number of graduate school applications, whereas diversity and research opportunity considerations were positively

Table 4 Mean Comparison of Motivational Factors by Free or Reduced Lunch Status

	Free/reduced lunch ($n = 301$), M (SD)	Not free/reduced lunch ($n = 493$), M (SD)	t	Cohen's d
Motivations to apply				
Professional development	0.01 (0.70)	−0.06 (0.70)	−1.52	−.111
Alternative to job	0.11 (0.67)	0.07 (0.68)	−0.79	−.058
To enhance job prospects	0.06 (0.75)	−0.07 (0.80)	−2.43*	−.177
Motivations to where to apply				
Recommendation, access to faculty, and funding	0.07 (0.09)	−0.03 (0.88)	−1.52	−.110
Balance with personal life, and other resources	0.18 (0.83)	0.01 (0.79)	−2.87**	−.210
Cost	0.15 (0.84)	−0.05 (0.84)	−3.25**	−.237
Reputation, quality, and connection to career	0.07 (0.94)	−0.03 (0.92)	−1.40	−.103
Diversity	0.22 (0.89)	−0.10 (0.92)	−4.85***	−.355
Research opportunities	−0.04 (0.83)	−0.07 (0.81)	−0.48	−.035

*$p < .05$. **$p < .01$. ***$p < .001$.
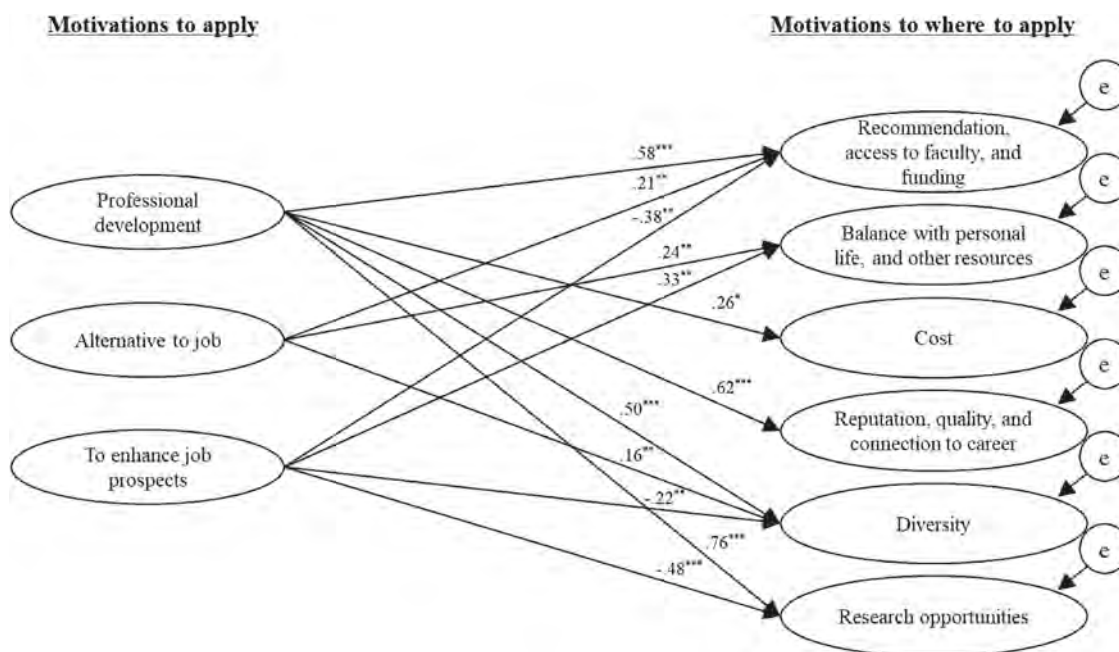
Figure 2 Exploratory Structural Equation Model Showing the Association Between Factors for (a) Whether to apply and (b) Where to Apply to Graduate School. *Note.* $\chi^2(381) = 1010.000$; RMSEA = .041, 90% CI [.038, .044]; SRMR = .033; CFI = .974; TLI = .961. Only significant paths are shown. Estimates are standardized coefficients.
*$p < .05$. **$p < .01$. ***$p < .001$.

associated the number of applications. Not surprisingly, the number of graduate school applications was a significant and positive predictor of the number of graduate school acceptances. The cost factor for where to apply was the only significant, negative motivational factor that predicted graduate school acceptances above and beyond the number of applications.

Discussion

The current study explored the personal and institutional factors that individuals consider when developing intentions to apply to and selecting graduate school programs. Importantly, by examining how the factors individuals placed importance on vary by gender, ethnicity/race, and SES and also how these factors are associated with graduate school application and acceptance outcomes, we provide insight into how individuals' demographic and psychological factors may shape the decision-making process in graduate school pursuit and application choice.
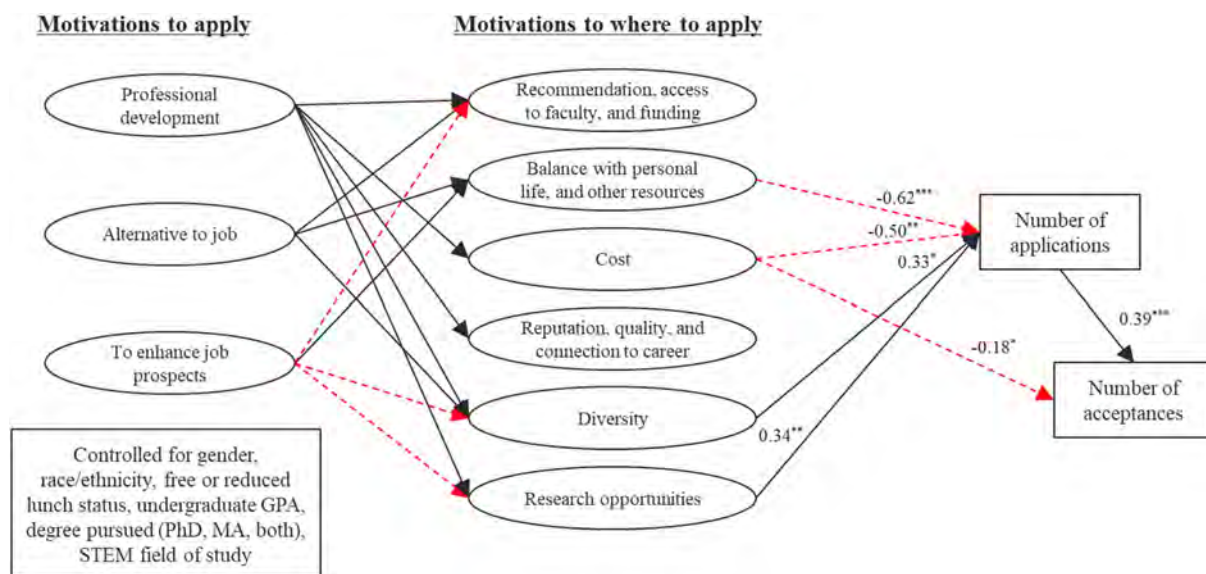
Figure 3 Exploratory Structural Equation Model Showing the Association Between Motivational Factors, Number of Applications, and Number of Acceptances. *Note.* Only significant paths are shown. Paths with dotted lines represent a negative beta estimate. Beta estimates between the motivational factors are not shown. $\chi^2(670) = 853.413^{***}$; RMSEA = .017, 90% CI [.013, .020]; SRMR = .034; CFI = .987; TLI = 981.
*$p < .05$. **$p < .01$. ***$p < .001$.

Factors Considered in Graduate School Decision-Making

One unique contribution of our study was to configure two sets of factors in graduate school decision-making regarding whether to and where to apply grounded in the idea that the intentions to consider a certain career path are formed before individuals make decisions in service of a specific goal. We found that the factors that may have led individuals to consider graduate school were divided in to three distinct categories: professional development to advance to a higher professional field, alternatives to direct employment, to increase earnings or job prospects.

Regarding "where to apply" motivations, the current study identified factors somewhat different from Kallio's (1995) identification of the academic and work/family-related factors that were important in making graduate school enrollment decisions. For example, similar to what were defined as "academic" factors in Kallio's (1995) study, we identified constructs related to institutional characteristics. However, in our study, these institution-related factors were further classified into three distinct factors: (a) recommendation, access to faculty, and funding, (b) reputation, quality, and connection to career, and (c) research opportunities. We speculate that individuals who are past the stage of making enrollment decisions, as in Kallio (1995), may have been more comprehensive in terms of putting multiple components of academic opportunities into consideration; those who were at the stage of preparing for application may have had specific and narrower sets of institutional components they valued.

Moreover, whereas the two diversity-related items used in Kallio's study (social/cultural opportunities, sensitivity to minorities and others) loaded on academic and social constructs as factors that influenced graduate school enrollment, our results identified a distinct diversity factor comprising multiple aspects, including diversity in faculty and community. Perhaps, the recent movement supporting racial diversity, equity, and inclusion enhanced applicants' desire to seek out higher education institutions that have environments that support those values.

Gender, Ethnicity/Race, Socioeconomic Status, and Factors Considered in Graduate School

We also compared the motivational factors across gender, ethnicity/race, and SES and found meaningful results. Compared to males, females were more likely to pursue graduate school for professional development and more likely to consider cost; reputation, quality, and connection to career; and diversity. Given evidence that women are still likely to gain less income from graduating college than men (Danziger & Ratner, 2010; DiPrete & Buchmann, 2006) and that a

bachelor's degree benefits men more than women in terms of increasing future earnings (Kane & Rouse, 1995), women may have stronger needs than men for seeking higher educational qualifications for professional occupations. This aligns with the consistent growth in women's participation in graduate school and specifically in master's degree programs (Nevill et al., 2007; Perna, 2004).

Interestingly, Asian Americans (who tend to pursue higher education to a greater degree than other ethnic/racial groups; Nevill et al., 2007) were more likely to endorse the factor that represented individuals' passive intentions to apply to graduate school because direct employment was either unfeasible or undesirable. Asian-Americans often grow up with a strict success frame and a sophisticated supplementary educational system (e.g., after-school and weekend classes, SAT preparatory course) geared toward entering professional careers (e.g., law, medicine), which may increase the likelihood of their entrance to higher education in general, and at selective institutions specifically, compared to other ethnic/racial groups in the United States (Lee & Zhou, 2017). Due to this educational and occupational outlook, Asian Americans may be more likely to pursue graduate degrees rather than seek employment immediately after the completion of their undergraduate education, particularly because the jobs that align with their career goals are likely to require more than a bachelor's degree.

Similar to Poock and Love (2001) and Bersola et al. (2014) findings, we also found that the diversity factor was considered more important among students of all ethnic/racial groups compared to White students. Interestingly, females and those with disadvantaged SES backgrounds also tended to value diversity in selecting graduate programs. Our findings thus constitute evidence that historically marginalized or disadvantaged populations in higher education tend to seek an educational environment that values cultural inclusion and awareness.

Association Between Factors for Whether to Apply and Where to Apply to Graduate School

In our study, the motivational factor to consider graduate school for professional development was positively associated with most of the motivational factors for selecting graduate school programs, suggesting individuals who are interested in professional development tend to consider multiple aspects of the graduate school environment in selecting graduate programs. Those who intended to pursue graduate school as an alternative to employment were more likely to consider less academically oriented factors, including recommendation, access to faculty connections, and funding; balance with personal life, other resources; and diversity, indicating these individuals seek to explore a more about graduate life in domains other than career training or academic success. Lastly, those who sought graduate school to increase job prospects were less prone to value recommendation, access to faculty, and funding; diversity; and research opportunities in selecting graduate programs. This may indicate that those who consider graduate school as a channel to land on better jobs may not place as much importance on building social connections during their years in a graduate program. Although a deeper exploration is needed based on why certain intentions to apply are linked to certain factors in deciding graduate school, our findings suggest that the factors individuals consider when selecting graduate programs vary by why they decided to apply to graduate school (e.g., instead of or as a supplement to direct employment).

Factors Considered in Graduate School Decision-Making and Graduate School Enrollment and Application

We also examined the factors' associations with the number of graduate school applications and acceptances. We found that factors related to the decision to apply to graduate school did not directly predict graduate school application and acceptance outcomes. However, they were associated with factors for selecting graduate programs and may, in turn, have an indirect role on individuals' action and success outcomes. Regarding factors for choosing graduate programs, the balance with personal life, and other resources; and cost factors were negatively associated with the number of applications, suggesting those who take into account the personal and financial costs entailed in graduate education may be more selective in choosing programs that would help them make the least compromises in other aspects of their lives. However, it is also potentially alarming that the cost factor had a direct negative association with the number of acceptances, suggesting that those who are more sensitive to educational costs are less likely to have an opportunity to earn higher degrees.

Interestingly, the diversity factor in selecting graduate program(s) was positively associated with the number of graduate school applications, suggesting graduate school pursuers who value diversity actively explore and apply to a greater number of programs. In order to attract more students who can contribute to the diversity considerations in graduate

programs, it may be worthwhile for graduate admissions decision-makers to find ways to identify potential applicants who value diversity and incorporate assessment of that desire into the admissions process (as such applicants themselves tend to be more diverse).

Limitations and Future Directions

The current study provides critical insights into the factors that individuals consider when making graduate school decisions and their associated precursors and outcomes. Nonetheless, it is not without limitations. First, this study used a sample of GRE test takers and followed their later application and acceptance outcomes. However, GRE test takers may vary in their stage of the grade school application process (e.g., some are actively searching; some may have just tried to take a test to explore if this seems feasible). Because we collected the factor information before individuals may have actively started to search for graduate programs, we may have not captured the factors that individuals considered when selecting their fˌnal list of graduate schools. Still, by doing so we were able to estimate whether the previously valued factors impact whether or how much effort they made in applying to schools. In order to better understand the association between the factors that motivate individuals to apply to graduate school and subsequent attainment outcomes, future research would benefit greatly from incorporating detailed information on individuals' stage of application process and the characteristics of the programs they applied to and eventually enrolled in.

Further, GRE test takers are not necessarily representative of the entire population of individuals considering attending graduate school. Additionally, we were only able to use 5% of the GRE test-takers who participated in both our surveys, which may indicate that our sample consists of those with a particular demographic or attitudinal characteristics (e.g., more motivated to apply to graduate school). Given this, caution must be exercised when attempting to draw conclusions about the general population of individuals seeking graduate degrees from the results of this investigation, especially given that these data were gathered prior to the COVID-19 pandemic.

We focused on identifying the psychological factors that impact potential applicants' graduate school pursuits. However, there are other factors in play that may shape individuals' graduate school application decisions and acceptance outcomes, including institutional characteristics (e.g., region, selectivity, type) as well as other variables that play a role in the graduate school acceptances and rejections (e.g., admissions test scores, personal statement, recommendation letters). We were not able to gather and control for the GRE test score data, which was a major component of the application requirements in many graduate programs at the time of our data collection. Incorporating other applicant qualification indicators and comparing the associations with graduate program characteristics would be a fruitful area for future research.

Lastly, the data we used were collected in 2017, and major events have occurred since then that may have altered the associations we uncovered, such as the COVID 19 pandemic, greater awareness of diversity issues, and increased prevalence of test-optional policies. Thus, we urge that other investigators seek to replicate our findings using more recent, and ideally population representative, data.

Conclusion

People from varying backgrounds have different motivations for pursuing a graduate education. Our findings show that individuals' demographic characteristics are related to their motivations for applying to graduate school, their actual application behaviors, and in turn, their acceptance outcomes. We suggest that graduate programs take these motivations into account not only when making their admissions decisions but, more importantly, also when designing and deploying materials relevant to outreach and recruitment (e.g., brochures, mailers, visiting university campuses, websites). This practice will help graduate school personnel not only attract potential candidates from varying sociodemographic backgrounds but also gain insights into key populations that value—and can enhance—both diversity and the *climate for* diversity in graduate education. Indeed, there is much more room to explore in this arena, and we encourage researchers to replicate and extend our findings.

Acknowledgments

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Appendix A

Table A1 Exploratory Factor Analyses Model Fit Indices by the Number of Latent Classes Regarding Factors for Whether to Apply to Graduate School

Number of classes	Eigenvalues	CFI	TLI	RMSEA, 90% CI	SRMR
1	2.330	.654	0.515	.174 [.162, .186]	.189
2	2.001	.937	.865	.092 [.077, .107]	.069
3	1.072	.993	.972	.042 [.020, .065]	.026
4	0.747	.999	.986	.029 [.000, .076]	.011

Note. Due to the small number of items used for the factor analyses, the maximum number of possible factors to be extracted was set to 4. The model with three latent classes was selected as our final model.

Table A2 Exploratory Factor Analyses Model Fit Indices by the Number of Latent Classes Regarding Factors for Where to Apply to Graduate School

Number of classes	Eigenvalues	CFI	TLI	RMSEA, 90% CI	SRMR
1	9.703	0.727	0.704	.136 [.133, .139]	.116
2	2.745	0.830	0.799	.112 [.109, .115]	.083
3	1.742	0.884	0.850	.097 [.094, .100]	.068
4	1.437	0.927	0.898	.080 [.077, .084]	.050
5	1.215	0.952	0.925	.068 [.065, .072]	.041
6	1.092	0.975	0.956	.052 [.048, .056]	.031
7	0.885	0.981	0.963	.048 [.044, .053]	.026
8	0.810	0.987	0.972	.042 [.037, .047]	.022

Note. The model with six latent classes was selected as our final model.

Appendix B

Table B1 Factor Loadings of Exploratory Structural Equation Model Regarding Factors for Whether to Apply to Graduate School

Observed indicator	*M*	*SD*	Professional development	Alternative to job	To enhance job prospects	R^2
				Latent construct		
1.1. I wanted to learn more about a specialty	4.44	0.94	0.76***	0.00	−0.28*	0.46
1.2. I wanted an advanced degree for personal satisfaction	4.21	1.11	0.55***	0.00	0.02	0.32
1.3. My field of interest requires an advanced degree to be a professional in the field	4.19	1.26	0.34***	−0.21***	0.15	0.24
2.1. I had nothing else to do	1.49	1.01	0.06	0.92***	−0.02	0.83
2.2. A friend was going to the school	1.53	1.10	0.09	0.60***	0.08	0.38
2.3. I could not find a job	1.88	1.32	−0.03	0.56***	0.34***	0.46
3.1. I wanted to earn more money	3.98	1.26	0.03	−0.02	0.84***	0.72
3.2. I thought my job prospects would be better	4.15	1.22	0.08	0.01	0.75***	0.62

Note. $\chi^2(7) = 19.098$***; RMSEA = .042, 90% CI [.020, .065]; SRMR = .016; CFI = .993; TLI = .972. *$p < .05$. **$p < .01$. ***$p < .001$.

Table B2 Factor Loadings of Exploratory Structural Equation Model Regarding Factors for Where to Apply to Graduate School

			Latent construct						
Observed indicator	*M*	*SD*	Recommendation, access to faculty, and funding	Balance with personal life, and other resources	Cost	Reputation, quality, and connection to career	Diversity	Research opportunities	R^2
1.1. Recommendation/input from a mentor	3.36	1.48	0.82***	0.01	−0.14**	0.01	−0.04	0.01	0.636
1.2. Recommendation/input from employer or colleague	3.07	1.54	0.75***	0.19**	−0.05	−0.01	−0.02	−0.09	0.586
1.3. Recommendation/input from student(s) in program	3.13	1.50	0.60***	0.14	−0.02	0.22***	0.05	−0.26***	0.575
1.4. Access to faculty	3.82	1.28	0.46***	−0.09	0.13**	0.29***	0.09*	0.07*	0.612
1.5. Availability of departmental funding (i.e., assistantships, fellowships, grants, etc.)	3.83	1.36	0.39***	−0.04	0.30***	0.02	0.03	0.32***	0.499
2.1. Ability to continue working at my job	2.07	1.51	0.01	0.71***	0.06	−0.03	−0.04	−0.18**	0.601
2.2. Financial support from my employer	2.00	1.47	0.35***	0.60***	0.07	−0.23**	−0.01	0.03	0.491
2.3. Availability of job/academic opportunities for partner	2.90	1.68	0.06	0.47***	−0.01	0.27**	0.09*	0.17**	0.446
2.4. Student support services (e.g., writing center, child care grants)	2.58	1.51	0.12*	0.41***	0.02	0.17*	0.30***	0.11	0.529
2.5. Location/distance from home	3.40	1.57	−0.14*	0.38***	0.20***	0.17**	0.03	−0.14*	0.305
3.1. Cost of tuition	3.62	1.35	0.01	0.18	0.69***	0.05	−0.02	−0.07	0.585
3.2. Cost of living	3.36	1.35	0.16**	0.07	0.62***	0.04	0.02	0.03	0.535
4.1. Institutional reputation	4.15	1.08	0.02	−0.02	−0.39***	1.00***	−0.03	−0.03	0.753
4.2. Program ranking/selectivity	3.82	1.23	0.03	0.03	−0.40***	0.88***	0.00	0.02	0.641
4.3. Connections for job possibilities in the area	3.70	1.37	−0.07	0.35***	−0.05	0.58***	0.02	−0.01	0.454
4.4. Quality of faculty	4.22	1.08	0.45***	−0.37***	0.06	0.53***	0.01	0.04	0.808
4.5. Program structure and requirements	4.14	1.05	−0.01	0.02	0.06	0.52***	0.04	0.06	0.355
4.6. Particular field of study was available	4.52	0.93	−0.03	−0.03	0.06	0.50***	−0.23***	0.33***	0.360
4.7. Job placement record	3.35	1.5	0.14*	0.12	0.11**	0.50***	0.11**	−0.19***	0.503
4.8. Quality of facilities	3.86	1.23	0.26***	−0.17**	0.13**	0.49***	0.04	0.02	0.548
5.1. Diversity of student body	3.18	1.45	−0.08*	0.05**	−0.08**	0.05	0.97***	0.01	0.877
5.2. Community diversity	3.33	1.45	0.05	−0.06*	0.06*	−0.03	0.91***	−0.09**	0.831
5.3. Diversity of faculty	3.21	1.47	0.14***	−0.05	0.03	0.00	0.75***	0.05	0.735
5.4. Surrounding community (e.g., safety, cultural opportunities)	3.63	1.36	−0.03	0.13**	0.06	0.29***	0.37***	0.17***	0.497
6.1. Research opportunities	3.76	1.39	0.36**	0.08*	−0.01	0.00	0.01	0.76***	0.871
6.2. Faculty research interests	3.83	1.39	0.38***	−0.02	−0.03	0.03	0.06	0.66***	0.810

Note. SE = standard error. $\chi^2(184) = 686.785$; RMSEA = .053, 90% CI [.049, .057]; SRMR = .026; CFI = .976; TLI = .958. *$p < .05$. **$p < .01$. ***$p < .001$.

Appendix C

Regression Coefficients From Exploratory Structural Equation Modeling Predicting the Number of Graduate School Applications and Acceptances From Motivational Factors and Covariates

	Number of applications, *b* (*SE*)	Number of acceptances, *b* (*SE*)
Motivations to apply		
Professional development	0.43 (0.35)	−0.04 (0.16)
Alternative to jobs	−0.15 (0.16)	0.03 (0.09)
To enhance job prospects	0.04 (0.24)	0.01 (0.12)
Motivations to where to apply		
Recommendation, access to faculty, and funding	0.13 (0.14)	0.07 (0.07)
Balance with personal life, and other resources	−0.62 (0.17)***	−0.09 (0.07)
Cost	−0.50 (0.15)**	−0.18 (0.08)*
Diversity	−0.25 (0.18)	0.03 (0.07)
Reputation, quality, and connection to career	0.33 (0.15)*	0.00 (0.10)
Research opportunities	0.38 (0.14)**	0.06 (0.07)
Number of applications		0.39 (0.02)***
Gender (Male = 1)	0.05 (0.22)	−0.14 (0.12)
Ethnicity/race (Ref = White)		
Black	−0.20 (2.06)	0.06 (0.69)
Hispanic	−0.42 (1.80)	0.12 (0.59)
Asian	0.23 (1.07)	−0.04 (0.31)
Free or reduced lunch in high school	0.01 (0.51)	−0.26 (0.21)
Undergraduate GPA	0.20 (0.48)	0.36 (0.17)*
Degree pursued (Ref = Master's only)		
Doctoral only	1.57 (0.27)***	−1.02 (0.14)***
Both master's and doctoral	0.66 (0.28)*	−0.55 (0.15)***
STEM major	−0.05 (0.21)	0.15 (0.10)

Note. SE = standard error; Ref = reference group.

*$p < .05$. **$p < .01$. ***$p < .001$.