The predictive power of university pedigree on the graduate's performance in global virtual teams

By: Vas Taras, Marjaana Gunkel, Alexander Assouad, Ernesto Tavoletti, Justin Kraemer, Alfredo Jiménez, Anna Svirina, Weng Si Lei, Grishma Shah

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Abstract:

The university rank is commonly used as a predictor of the performance of graduates. Unfortunately, prior research has primarily focused on the effect of university rank on graduates' pay level, which is not the same as performance. We tested both the positive and negative effects of the academic pedigree on the different aspects of actual performance. Using a sample of 28,339 students from 294 universities in 79 countries who completed a business consulting project, we tested if and how the performance of students from higher-ranked universities differed from that of students from lowerranked universities. The results show that graduates from higher-ranked universities generally perform slightly better. However, a more prestigious academic pedigree can also be associated with arrogance, excessive focus on tasks at the expense of relationships, and envy of co-workers, which could undermine the performance potential of graduates from higher-ranked universities.

Keywords: global virtual teams | international business students | performance | talent identification | university rank

Article:

1 Introduction

From the perspective of both students and potential employers, education is a significant investment and an indicator of a student's potential in the workplace (Badenhausen, 2013; Dearden et al., 2006). In the absence of better indicators of quality of education, university rankings are commonly used by students to guide their choices of university programs, thinking that a higher university rank would indicate the provision of a betterquality education and the attainment of better career prospects (Dill and Soo, 2005). Likewise, the right hiring decisions can significantly improve organizational effectiveness, while inadequate hires can become a liability to an employer. Despite their well-known flaws, university rankings are still commonly used by employers to guide

their choice of new hires (Deresiewicz, 2014; Paruolo et al., 2013; Soo, 2013). In fact, some companies are known to recruit only graduates from elite universities based on the belief that such top-ranked universities produce superior talents (Rindova et al., 2005).

Graduates from higher-ranked universities tend to be more employable and command higher pay. Therefore, it is commonly assumed that a degree from a higher-ranked university is a sign of better performance (Ryan et al., 2015). However, the causality could be reversed. The belief that the university rank predicts performance could give graduates from top universities an initial advantage in the form of a better starting job with more responsibilities, resources and higher pay, which leads to more on-the-job training and professional connections, which triggers a virtuous cycle that fuels further professional growth. The initial advantage leads to the acquisition of new skills and experiences, which paves the way for better jobs and more opportunities.

No doubt, university rank predicts pay, but does it also predict actual job performance? While it is natural to assume a positive relationship, the size and the direction of the effect of university rankings on future job performance is all but certain. Most studies measure the job performance of graduates using post-graduation employability or starting salary (Kingston and Smart, 1990; Thomas, 2003; Thomas and Zhang, 2005). Even though graduates from top universities earn more, it is uncertain if their higher pay is a result of superior performance or merely a premium for their superior academic pedigree.

Furthermore, while the effect of academic pedigree and pay has been welldocumented, the relationship may not be linear, thereby complicating the interpretation of these findings (Pascarella et al., 2005). Some studies showed that only graduates from the most elite institutions have higher long-term earnings, while the university rank-pay correlation seems to be close to zero for the lower-tier universities (Hoxby, 1998). Several studies have also assessed the long-term return on investment in university education and found that, at least for some majors, the higher tuition charted by higherranked universities is not always offset by improved long-term earnings (Badenhausen, 2013; Pascarella et al., 2005).

As students are contemplating on whether or not the more expensive higher-ranked universities provide better training and career preparation, employers are weighing the pros and cons of hiring costlier graduates from top universities. The challenge is to find employees who can not only churn out high-quality products but also get along with their co-workers and create a collegial work climate that boosts motivation, morale, cooperation, retention and organisational citizenship behaviour, thereby helping the company to achieve its goals.

Particularly challenging is predicting one's ability to work in teams. Teams are becoming ubiquitous in most organisations, and the increasing reliance of organisations on Global Virtual Teams (GVTs), where team members are globally distributed and rely on online tools for communication are gaining, is particularly noticeable (Gilson et al., 2015). Studies have shown that virtual work has become a norm in OECD countries. In these countries, 50 to 70% of white-collar workers occasionally work on projects that require some form of virtual collaboration, often across national borders (e.g., Duarte and Snyder, 2011; Kurtzberg, 2014). Estimates by RW3 Culture Wizard (2018) suggested even higher numbers, with 89% of corporate employees surveyed in their study, reporting that they had worked in GVTs at least once. The COVID-19 crisis of 2020 further highlights the importance of virtual collaboration skills, and it is expected that organisations will increasingly rely on GVTs.

While there may be evidence that there are various positive effects associated with university rankings, such as networking (Wandel, 2008), brand recognition (Priporas and Kamenidou, 2011) and legitimacy (Chapleo, 2004), which certainly aid one's career advancement,

the benefits of these advantages for simply "getting work done" are not self-evident, especially when working in a team. Even though teams are put together to harness synergies arising from complementarities of skills and experiences of the team members, these synergies can only be realised under the condition of a supportive and collegial team climate. However, not every individual is a team player. It takes much more than technical skills and knowledge to create positive team dynamics. The issue is further complicated by the confounding effects of cultural and institutional differences that are common in GVTs, not to mention online work arrangements. When all is taken into account, the advantages offered by the brand, legitimacy, networking opportunities, and even technical skills afforded by higher-ranked universities may be negated by the myriad of other factors that reduce performance. Furthermore, personality traits and other non-academic factors may emerge as more critical for the success of the project team

The present study seeks to fill this gap. Rather than using employability or pay as an indicator of performance, we assess the direct link between university rank and students' performance in a business consulting project completed in GVTs. Most importantly, we evaluate multiple dimensions of job performance. Gone are the times when the output rate on the factory floor was a single sufficient indicator of worker performance. To capture this complexity, we conduct a 360-degree evaluation of performance. In addition to the expert-evaluated quality of the output, we also use organisational records as well as peer and self-evaluations to measure effort, motivation, intellectual contribution, collegiality, leadership, technical and interpersonal skills.

Furthermore, we test both the positive and negative effects of academic pedigree. While prior research generally assumed the positive relationship, some studies, nonetheless, have considered a possibility that higher university rank may not always have positive long-term effects (Pascarella et al., 2005; Badenhausen, 2013). In the absence of a prior comprehensive theoretical model, we have developed our own framework for analysing the predictive power of academic pedigree that considers the competing positive and negative effects of university rank on student performance. One of the contributions of our study is that our analyses show that the relationship between the university rank and the effectiveness of students on team-based business projects can vary dramatically depending on which aspect of performance is evaluated. The conclusion is that one size does not fit all. The nature of the project and the relative importance of the different aspects of the job must be taken into account. The study contributes to the still relatively small area of talent identification, in line with calls for research that highlights the growing importance of human capital, particularly in the contexts of the ever more ubiquitous virtual and international collaborations (Wright and McMahan, 2011).

The remainder of the paper is organised as the following: first, based on previous studies, we introduce a framework of the competing positive and negative effects of academic pedigree on student performance; we then describe the methodology and sample we used and proceed with detailing the results of our tests; we conclude the paper with a discussion of implications for future research and management practice.

2 Theoretical framework

2.1 The competing effects of academic pedigree: the SET-EAR framework

Intuitively, graduates from higher-ranked universities should perform better than graduates from lower-tier universities. However, the literature on the topic reveals a more nuanced picture. Prior research has explored both the positive and negative effects of academic pedigree on performance,

albeit it prior studies typically considered one factor at a time. We have identified six mechanisms that link university rank to performance ratings of its graduates: three positive and three negative. The six factors form the mnemonic SET-EAR that provides a framework for our analysis, which we describe below. Each of these six factors acts through a different mechanism and affects a different aspect of employee effectiveness. It is important to note that the SET-EAR framework does not provide a single overarching theory of how university rank relates to performance evaluations, but rather it is a compilation of the disparate factors that have been considered in prior research. We acknowledge that the list of the six factors may not be exhaustive, and there may well be other mechanisms at play. However, our framework provides a more nuanced picture. Rather than analysing the effects of one factor at a time, as has been done in prior research, we compare and contrast multiple – positive and negative – effects in one sample

The SET component of our analysis framework – Selection, Environment and Training – represents the factors that positively link university rank with the performance of the students. In contrast, the EAR component –Envy, Arrogance and Relationships – describes three factors that can negatively impact the performance and effectiveness of graduates from high-rank universities. The objective of the SET-EAR framework is not to explain what predicts student performance, but to provide a road-map for testing if and how university rank is predictive of student performance. Accordingly, our study proceeds with, first, assessing the overall relationship between university rank and performance, and then testing the individual mediating effects of higher selectivity (S), more nurturing and inspiring academic environment (E) and better training (T) provided by higher-ranked universities, as well as that of the envy of co-workers (E), arrogance (A) and neglect of relationships (R) that graduates from higher-ranked universities often display.

2.2 Positive effects: SET

Selection (S): Most university rankings attribute much weight to the selectivity of the admissions process (e.g., standardised admissions tests and high-school grades). Dill and Soo (2005) compared the ranking systems in four countries and found that high school grades and admissions exam scores play a prominent role in all of them. As Moller et al. (2011, p.663) note, "the most selective colleges generally seek students with the strongest academic background, and they place substantial weight on standardised tests." Such scores are often given more weight than the quality of faculty, availability of resources, or other indicators of university prestige (Dill and Soo, 2005). Higher selectivity results in a higher quality of the incoming class, which provides an advantage irrespective of the quality of training and student experiences offered by the university. If higher-ranked universities can recruit students who had demonstrated superior performance, skills and aspirations even before they were admitted, it would be reasonable to expect that these students would continue to excel will perform better after graduation. Hence, we assume that:

Hypothesis 1: University rank is positively associated with performance due to the more stringent selection criteria applied by higher-ranked universities.

Environment (E): Education is not limited to lectures and seminars. The academic environment to which the students are exposed is a significant component of education. Being around smart, motivated and successful people, successful and hard-working star professors, as well as equally hard-working and achievement-oriented peers, may advantageously shape students, their motivations, aspirations and work ethics. As suggested by Bandura (1986, 2012), a more nurturing

environment tends to inspire higher, more demanding goals, stronger beliefs in personal ability, and greater personal motivation to achieve those goals. Past work corroborates the positive effect of self efficacy and personal goals on enhancing motivation and performance (Gully et al., 2002; Holden, 1992; Moritz et al., 2000; Multon et al., 1991; Stajkovic and Luthans, 1998). Thus, the environment in highly-rank universities may improve performance by boosting self-efficacy, inspiring students to aim for higher goals, working harder towards those goals, and ultimately demonstrate better performance (Locke and Latham, 1990, 2002).

Hypothesis 2: University rank is positively associated with performance due to the nurturing and inspiring environment provided by higher-ranked universities.

Training (T): As a whole, the primary service provided by universities is teaching through lectures, practical lessons and other forms of training. Higher-ranked universities are believed to provide better training. Better universities employ better instructors and offer access to better-equipped facilities, attract better guest speakers, which presumably leads to better training and, in turn, better training leads to better performance (Dearden et al., 2006; Mason and Van Ark, 1994; Zwick, 2005). This relation is supported by various meta-analyses demonstrating a positive relationship between training and task performance (e.g., Ng and Feldman, 2009). Therefore, we expect that:

Hypothesis 3: University rank is positively associated with performance due to better training provided by higher-ranked universities.

2.3 Negative effects: EAR

Envy (E): Attribution theory helps comprehend the perceptions individuals have about others. According to Fiske and Taylor (1991), it "deals with how the social perceiver uses the information to arrive at causal explanations for events." When evaluating the behaviour of others, we try to determine if it is under the observed person's control (internally driven) or caused by outside events (externally driven) (Heider, 1958). Fundamental attribution bias can play a role and negatively impact both subjective peer evaluations of the graduates from top universities but ultimately also undermine their objective performance. The fundamental attribution bias is a tendency to attribute other's success to external factors and their failure to internal factors (Ross, 1977). Team members from higher-ranking universities share a common identity, unlike team members from a lower-ranking university who form different identities through ingroup/outgroup mechanisms (Janis and Janis, 1982; Turner, 2010). This ingroup/outgroup dynamic can lead to adverse effects on team dynamics when students from both types of universities work together. Owing the fundamental attribution error, individuals from lower-ranked universities may evaluate individuals from higher-ranked universities based on this ingroup/outgroup differentiation.

Belonging to a certain group within an organisation may bring about positive outcomes. However, these may also lead to comparison with peers as individuals have a fundamental need to find and assess their place in social environments such as GVTs (Duffy et al., 2008). Envy, which is "the unpleasant and negative emotions driven by comparison with one's co-workers and focusing on what one does not have compared to others" (Kim et al., 2010), implies a desire to reduce the relative disadvantage (Fiske, 2010). Those from a lower-ranked university may view the advantages accrued by those from a higher-ranked university as unfair. This may not only affect peer evaluations, an important component of performance appraisal that often determines who gets

promoted or entrusted with managing a more important project but also lead to lesser support or even active sabotage of the efforts by colleagues with more prestigious academic pedigree. Thus, in addition to lower subjective performance ratings, envy can have a real negative effect on objective performance (Cohen-Charash and Mueller, 2007; Tai et al., 2012). Therefore, we expect that:

Hypothesis 4: University rank is negatively associated with performance evaluations due to the envy graduates from higher-ranked universities experience from their colleagues with less prestigious academic pedigree.

Arrogance (A): Another consequence of ingroup/outgroup differentiation and attribution bias could be arrogance. However, this time it is displayed by graduates from higherranked universities towards their less academically endowed colleagues (Cosier and Schwenk, 1990; Sims, 1992, p.658). Sims (1992, p.658) defines arrogance as "the illegitimate child of confidence and pride found in groups experiencing groupthink." Arrogance is the idea that not only can you never make a mistake, but no one else can ever be right." The prestige afforded by higher-ranked universities to their graduates may induce arrogance. Arrogance reduces likability, and people who display these traits may receive less sympathy and support (Feather and McKee, 1993; Schlenker and Leary, 1982). Consequently, an exaggerated sense of self-importance or achievement may damage interpersonal relations with colleagues, making it more challenging to function as part of a team. This can not only lower subjective peer evaluations, but also lower one's ability to effectively perform job duties, thereby lowering objective performance indicators.

Hypothesis 5: University rank is negatively associated with performance evaluations due to the arrogance of colleagues from higher-ranked universities towards their colleagues from lower-ranked universities

Relationship (R): Lastly, highly-ranked universities tend to emphasise task and performance as well as focus on instrumentality over interpersonal relationships (Deresiewicz, 2014). An unyielding pursuit of technical skills and high-quality results, as well as constant focus on meeting aggressive deadlines, may come at the expense of interpersonal relationships. Nevertheless, relationship-building has been shown to be a critical contributor to career success. Furthermore, this is also a fundamental component of various team processes and performance (Pauleen, 2003; Pauleen and Yoong, 2001). A strict task focus may reduce friendliness and collegiality with team members, especially with out-group members. This can backfire in the form of lesser support from colleagues, which can adversely affect performance.

Hypothesis 6: University rank is negatively associated with performance due to an excessive focus on the task at the expense of damaged relationships with colleagues.

3 Method

3.1 Sample

To test the relationship between university rank and student performance, a sizable sample of students from universities of different ranks working on the same task is necessary. To ensure

validity and reliability, the task needs to be similar to projects completed by organisational employees. That is, the project must be complex, of a sizable duration, and must require various skills. Furthermore, performance must be evaluated along multiple dimensions using data from multiple sources. Even a large organisation that employs thousands of employees with various academic pedigrees may not be a suitable platform for a study of this kind, because all of those employees likely work on different tasks and projects, rendering a direct comparison invalid.

The X-Culture project provided a suitable sample for this study (for more information, see Taras et al., 2012). Every semester, the project attracts about 4000 business students from over 140 universities in 40 countries. The students work in GVTs of six to nine members. Usually, each team member is from a different country. About a dozen corporate clients offer their real-life business challenges, and the students essentially serve as business consultants to their corporate clients. Typically, the task requires the development of a market expansion strategy. With pre-project research and post-project presentations, X-Culture takes up an entire semester.

X-Culture is a high-stakes competition with an incentive structure and work design similar to a real workplace, particularly in the business consulting industry. Not only do the students who complete in the project receive certificates and recommendation letters, but also the best performers receive travel stipends for attending the annual X-Culture Symposium. Additionally, most partner companies offer aftermarket commissions and bonuses for the best solutions. Often, the students, who show the best performance, may receive internships and job offers. The project is typically part of international business, marketing, or entrepreneurship courses and accounts for 30 to 50% of the course grade. This high-stakes professional charge makes the X-Culture project reminiscent of a real business-consulting project. The cultural, institutional and time zone differences are real. The real corporate clients, real-life business challenges, and high-stakes competition provide the conditions that approximate the team-based environment of a real workplace. Student performance is closely monitored throughout the project. Weekly deadlines, deliverables, progress reports and multi-dimensional peer evaluations ensure a continuous and rigorous assessment of individual and team performance.

The X-Culture data used in this study are from the 2013 to 2016 academic years. The final sample comprised of 28,339 students from 294 universities in 79 countries coming from six continents. The average age of the participants was 23.3 years, and 50.2% were female. In terms of the level of studies, 31.8% were graduate students (mainly MBA or equivalent), while the rest were undergraduate students (or equivalent). The students had an average of 8.5 months of prior international experience (travel, study, or work overseas). 17.5% were international students (grew up in a different country than their current country of study). Since team membership was assigned at random, there were no systemic differences across the teams in terms of university rank, age, gender, level of study, or prior international experience. Based on the ranking system we chose for our study, the highest-ranked university in our sample was the University of Toronto at a rank of 17 while the lowest was Universita Unitelma Sapienza at a rank of more than 20,000.

3.2 Independent variable: university rank

University rank: A review of the literature revealed that there are four well-known university ranking systems: The Times Higher Education World University Rankings (THE), QS World University Rankings (QS), Academic Ranking of World Universities (ARWU) and Webometrics Ranking of World Universities (WO). A comparison of the rankings is presented in Table 1. The THE and QS are similar because they consider university reputation, employer reputation, and

faculty commitment in their ranking systems. They differ mainly in their manner of weighting the variables. The ARWU focuses on education and faculty quality. The latter is derived from the compilation of external awards and certifications granted to a university and the researchers therein. Finally, the WO focuses on online presence, including external links to university websites as well as measures of openness and excellence.

Table 1 Comparison of international university ranking systems

Criterion	*QS*	*ARWU*	*THE*	*Webometrics*
Academic reputation	40% survey of academics		30% (based on global survey of academics)	
Alumni reputation	10% survey of employers	10%, alumni with Nobel prizes and Fields medals	2.5% survey employers	
Research	20% commitment to teaching	20% Nobel prizes and Fields medals, 20% share of highly cited researches, 20% papers indexed by Thomson Reuters	30% research reputation, income from research, papers indexed by Thomson Reuters	
Citation per faculty	20% Scopus	20%, papers published in Nature and Science in the last 5 years	30% Thomson Reuters	
International diversity	5% students and 5% staff		7.5% students and staff	
Academic performance		10%		
Visibility				50% number of external links to the university website
Activity				50% presence, openness

Notes: N universities = 200; All correlations statistically significant at $p < 0.01$.

We first cross-referenced our sample of universities against the ranking systems. The THE, QS and ARWU were missing over half of the universities in our sample. Second, the four ranking systems correlate strongly, suggesting that despite some methodological differences, they measure the same underlying construct (see Table 2). We chose the WO because it not only contained all of the universities in our sample but also relies on more objective components (Aguillo et al., 2008). Therefore, WO can be considered as a less biased measure (e.g., QS and THE; Baty, 2015).

Table 2 Correlations of ranks from international university ranking systems

	QS	*WO*	*THE*	*ARWU*
QS	1.00			
WO	0.46	1.00		
THE	0.97	0.42	1.00	
ARQU	0.53	0.69	0.54	1.00

Notes: $N_{\text{universities}} = 200$; All correlations statistically significant at $p < 0.01$.

For the WO, 50% of the university rank is derived from the quality of a university's web content. These are evaluated by counting all the external links that a university web domain receives from third parties. The linked visibility data is collected by Majestic SEO and Ahrefs. Both use neutral third-party web crawlers to generate unique databases that are later merged. This component of the WO is the product of the square root of the number of backlinks and the number of domains originating those backlinks. Thus, not only link popularity but also link diversity is critical for the ranking (Webometrics, 2015).

The other 50% of the WO rank is derived from "activity," measured by three equally weighted sub-components: (1) Presence: the total number of webpages hosted in a university's web domain; (2) Openness: the number of recent publications downloadable off the web; and (3) (Research) Excellence determined by the number of academic papers published in high impact international journals (giving attention to the top 10% of the most cited papers in their respective fields). Since the WO did not provide continuous scores, we relied on ranks for our study.

3.3 Dependent variables: performance

Performance is hard to define, conceptualise and measure. Even for factory assembly-line jobs that are comprised of constant repetition of the same operation, defining and measuring performance may not be as easy as it seems. Therefore, we are left with the following questions: Would measuring the number of units produced be sufficient to capture performance? Should also timeliness, absenteeism, the accuracy of records, tidiness of the workstation, maintenance of the equipment, willingness to substitute a co-worker or work overtime, quality improvement suggestions and participation in quality circle meetings, organisational citizenship behaviour, mentoring or younger colleagues, treatment of co-workers and supervisors and other aspects of corporate life taken into account? If so, who and how should evaluate these other dimensions of performance? The picture may be even more complicated for white-collar jobs, which often have less clearly defined job duties and scheduling. Furthermore, white-collar workers do complex projects that require interaction with a much wider range of co-workers, clients and partners. The product itself could be multidimensional and its quality not readily quantifiable.

To cope with this uncertainty, most organisations rely on a combination of performance indicators from supervisors, peers, customers, organisational records and many more. Many, or even most, of these indicators are inherently subjective. In fact, for many jobs, objective measures may be impossible to obtain. For example, in cases when the project requires the development of a new product or a marketing strategy, it may not be possible to test the quality of the product until years later when it is implemented when the market's reaction could be observed. Even then, so many factors could be at play that isolating the effect of the employee performance from other external factors may be impossible. In the absence of readily-available objective measures,

subjective evaluations of effort, participation, collegiality, leadership and other "soft" performance indicators provided by supervisors, peers and customers are often used to measure performance.

To replicate the performance evaluation approach used for most white-collar workers, such as when evaluating business consultants working in teams and to capture all aspects of employee effectiveness, the present study utilised a combination of supervisor and peer evaluations as well as organisational records. A more detailed review of each measure is provided below.

Quality of the output: As noted earlier, the students worked on a consulting project, helping their corporate clients solve their international business challenges. The outcome of this work was a consulting report that detailed the students' solution to the challenge presented by the client. The quality of these reports was independently evaluated by five to seven business professors and/or client representatives, using ten distinct quality criteria. These include the quality of the executive summary, quality of each report section, strength and clarity of the supporting arguments, the creativity of the ideas, as well as the readability and formatting of the report. Each quality dimension was rated on a 7-point scale (1=poor, 7=outstanding). The overall quality of the report was operationalised as the average of the ratings across all evaluation dimensions and all independent report appraisers. The records also included information on the contribution that each team member made to the final report. To isolate the individual contribution of each team member to the consulting report, we multiplied the measure of the team report quality by the average peer-rated percentage contribution of a given team member. The average of all peer-rated contributions for a given team member to the consulting report was calculated and used as a measure of the quality of work produced by each team member. The internal consistency across the dimensions was very high (Cronbach's alpha 0.92), and inter-rater reliability was acceptable (Kappa 0.67).

3.4 Intervening variables: SET and EAR

Selection (S): It was represented by five variables, similar to those that are commonly used in the selection of the best applicants by universities. These included: general skills (S1), a 40-item pre-project test that assessed a student's general cognitive skills (100-point scale); the number of languages spoken (S2), a self-reported number of languages in which the student can communicate confidently; working language fluency (English) (S3), an average of a post-project peer-assessed English proficiency of the participant (5-point scale); prior international experience (S4), a summation of the selfreported number of months a participant worked, studied or lived overseas as well as cultural intelligence (S5) measured using the instrument by Ang et al. (2007).

Environment (E): It was assessed by indicators that proxy a nurturing and inspirational academic environment. Our focus was on capturing the attitudes and feelings induced by the project and team climate. These included: self-efficacy (E1): "How confident are you in your ability to successfully complete the project?" and motivation (E2): "How motivated are you to continue working on the project?" (each indicator is scored on a scale from 0 to 100). These questions are asked multiple times throughout the project. We used the overall average of the scores. Additionally, we used variables that proxy the student's attitudes toward the project before the project start. These included an assessment of how many hours they were planning to spend working on the project each week (E3) as well as their preference for being on an achievementoriented team (E4) by asking each student the type of a team on which he/she wanted to be a member.

Training (T): It was represented by indicators that pertain to specific technical skills that are generally taught at universities, particularly at business schools. They included: peer-assessed

intellectual contribution (T1), leadership/coordination skills (T2), technical skills (T3), business writing skills (T4) and communication frequency (T5). Each item was measured on a 5-point scale.

Envy (En): To create a score of Envy, we subtracted a subjective measure of the focal team member on certain dimensions of peer evaluations, from an objective measure of the same dimensions. The greater the difference, the greater the envy. The dimensions used for envy include: an assessment of leadership (En1) and interpersonal interaction (collegiality) from peer-assessed interaction frequency (En2). Before subtraction, we standardised the data with a mean score of zero and a standard deviation of one.

Arrogance (A): As a proxy for arrogance, we used a similar approach as above, deducting a person's self-assessment score from their peer evaluations A1. We also utilised the average peer-assessed per cent of work completed in a given week of the focal team member from a self-assessment (A2). We used the average peer-assessed formal leadership role of a focal team member from a self-assessment (A3). Finally, we measured self-reported team satisfaction and a desire to continue working with the team ("commitment" A4). Again, prior to calculating any difference, the measures were first standardised to a mean of zero and a standard deviation of one.

Relationship (R): was assessed utilising indicators that measure the extent to which a person devoted attention to interpersonal collegial relationships. The indicators in this category included peer-assessed collegiality via friendliness and collegiality (R1); the number of non-instrumental conversations measured as the number of conversations of personal and non-task-related matters (R2); conflict frequency as the count of interpersonal conflicts and/or tense moments reported by the participant (R3) and team identification through a self-reporting of how integrated the participant saw himself/herself within the team (R4). Again, as the measures were collected over multiple weeks, we averaged the scores.

3.5 Control Variables

Age, gender, study level, international student status and the weight of the X-Culture project in a student's course grade (10% to 100%) were controlled.

4 Results

Table 3 provides correlations between the university rank and the control variables. Since a low number represents a superior rank, a negative value generally indicates a positive association with the university rank. Students in our sample attending higher-ranked universities are slightly younger, typically on an undergraduate degree, more likely to be an international student and have less of their course grade dependent on the X-Culture project. There were no statistical differences in gender composition and university rank. In terms of individual performance, older students, international students and students whose grade was more heavily weighted on the X-Culture project did not perform better. However, the female participants in this study generally performed better.

We calculated both Pearson's product-moment correlations as well as Spearman's rho reported in Table 4, Columns 1 and 2. We also report unstandardised regression coefficients for university rank's prediction of each indicator (Column 3).

Table 3 Correlations between control variables, university rank and individual performance

Individual level	University rank	Individual performance
C1: Age	.017*	.004
C2: Gender (male=1, female=2)	.013	.081**
C3: Study level (1=Undergraduate, 2=Graduate)	.089**	.024**
C4: International student	-.067**	.001
C5: X-Culture project weight in the course	.017*	.001

Notes: $N_{individuals}$ = 26,475; * p < 0.05, ** p < 0.01

The relationship between university rank and individual performance was found to be advantageous (Table 4, Row 1). We also found a positive relationship with selection (S). On the other hand, university rank indicated a positive relationship with general skills (S1), working language fluency (English) (S3), more prior international experience (S4) and cultural intelligence (S5). However, contrary to our initial expectation, the relationship with the number of languages in which a person is fluent (S2) was negative.

Table 4 Associations with university rank

	(1)	*(2)*	*(3)*
	R (Pearson)	*Rho (Spearman)*	*Unstandardized coefficient (after controls) [Path a]*
Individual performance	–.094**	–.120**	–.002**
Selection [S]			
S1: General skills test	–.100**	–.155**	–0.000004**
S2: Number of languages fluent	0.91**	0.69**	0.000032**
S3: Working language fluency (English)	–.072**	–.202**	–0.000070**
S4: Prior international experience	–.071**	–.102**	–0.001057**
S5: Cultural intelligence	–.026**	.008	–0.000006**
Environment [E]			
E1: Self-efficacy	.038**	.074**	0.000246**
E2: Motivation	.045**	.070**	0.000285**
E3: Readiness to invest more time	.029**	.043**	0.000012**
E4: Preference to be on an achievement-oriented team	–.039**	–.069**	–0.000011**
Training [T]			
T1: Intellectual contribution	–.133**	–.107**	–0.000033**
T2: Leadership/coordination skills	–.046**	–.136**	–0.000030**
T3: Technical skills	–.100**	–.162**	–0.000030**
T4: Writing skills	–.101**	–.161**	–0.000033**
T5: Communication frequency	–.033**	–.037**	–0.000008**
Envy [En]			
En1: Formal leader role less peer assessed leadership	–.041**	–.077**	–0.000015**
En2: Interaction frequency less peer assessed collegiality	.082**	.066**	0.000019**

Table 4 Associations with university rank *(continued)*

	(1)	*(2)*	*(3)*
	R (Pearson)	*Rho (Spearman)*	*Unstandardized coefficient (after controls) [Path a]*
Arrogance [A]			
A1: Overall team contribution (Self less teammate average)	.084**	.094**	0.000018**
A2: % of work completed (Self less teammate average)	.042**	.039**	0.000089**
A3: Formal leader role (Self less teammate average)	.124**	.118**	0.000056**
A4: Team commitment‡ .058** .087** 0.000617**	.058**	.087**	0.000617**
Relationship [R]			
R1: Collegiality	–.062**	–.108**	–0.000040**
R2: Number of non-instrumental conversations	.018**	.062**	0.000012*
R3: Conflict frequency‡	–.027**	–.064**	–0.000010**
R4: Team identification	.070**	.062**	0.000022**

Notes: he unstandardised coefficients indicate the predicted effect of university rank on the various indicators. *p < 0.05, ** p < 0.01; All envy measures were subtractions of more subjective from more objective measures as assessed by the peers; ‡ Interpreted as opposite from other indicators

Concerning the effects of an encouraging and developmental academic environment (E), most indicators suggest an unexpected negative association. The relationships between university rank and self-efficacy (E1), motivation (E2) and a readiness to invest more time in the project (E3) were found to have a negative relation. Only achievement orientation (E4) was positively associated with the university rank.

University rank indicates a positive relationship with all indicators relating to skills that can be trained (T) through the university. These indicators include intellectual contribution (T1), leadership/coordination skills (T2), technical skills (T3), writing skills (T4), innovation (T5) and communication frequency (T6).

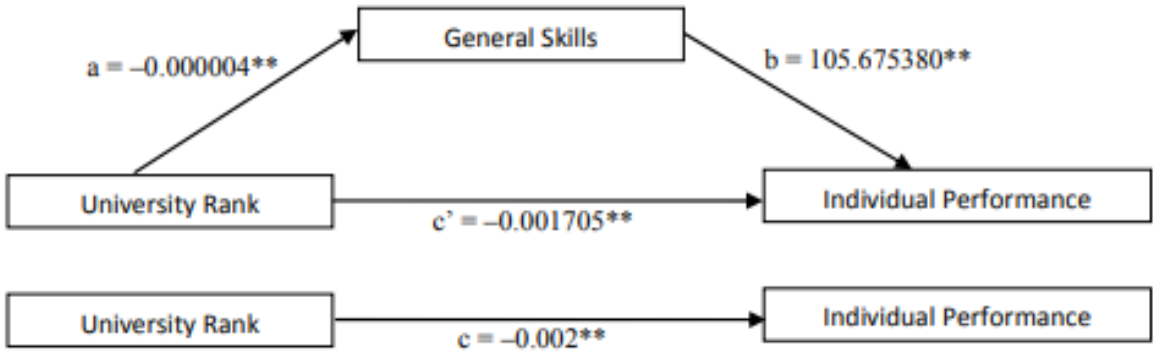
Starting with envy (En), as expected, the relationship between university rank and the net objective and subjective measures of leadership (En1) were found to be positive. In contrast, contrary to our expectations of a negative association, the relationship between university rank and the net objective and subjective measure of interaction frequency (En2) was positive.

Concerning arrogance (A), only one indicator of arrogance supported our anticipated positive association, namely team commitment (A4). Notably, though, students from higher-ranked universities tend to rate themselves lower than their averaged peer assessments on their contribution to team output (A1), per cent of work completed (A2) and their formal leadership role (A3). However, as expected, they were also found to display lower team commitment (A4).

Finally, concerning the excessive focus on the task and neglect of the relationships (R), all but one of the unstandardised regression coefficients were as predicted (Table 4, Column 3). University rank was disadvantageously associated with the number of noninstrumental conversations (R2), conflict frequency (R3) and team identification (R4). Nonetheless, university rank and collegiality (R1) were positively correlated.

We also tested the indirect effects of university rank on performance using the PROCESS Macro for SPSS by Hayes (2012). As suggested by Baron and Kenny (1986), the models that we tested (using different indicators) requires three regressions. We first used university rank to predict individual performance ("c" in Figure 1 or Table 4, Row 1). We then used university rank

to predict the mediator ("a" in Figure 1 or Table 4, Column 3). Finally, we predicted performance with both university rank and the indicator of interest. The effect of university rank on individual performance controlling the mediator is "c'" in Figure 1 (or Table 5, Column 1). On the other hand, the effect of the individual indicator of interest controlling university rank is "b" in Figure 1 (or Table 5, Column 2). Table 5 reports the unstandardised coefficients for the simultaneous entry of the controls, (1) university rank, (2) an indicator of interest, (3) the variance explained by a focal model, (4) the indirect effect of a focal model and (5) the effect size of the indirect effect (k^2). A sample model (S1: General skills) is detailed in Figure 1.



Notes: Indirect effect=–0.0004 (Table 5, Column 4), 95% BCa CI [–0.0005, –0.0003]

Figure Effect size of indirect effect 2 k^2 = 0.017 (Table 5, Column 5)
c: Table 4, Row 1
a: Table 4, Column 3
b: Table 5, Column 2
c: Table 5, Column 1

Table 5 (Column 4) shows that the indirect effect of university rank on individual performance is always statistically significant. However, its effect size (Column 5) ranges from nearly 0% to 5%. Concerning SET, our overall results suggest that university rank leads to higher performance due to both selection (S) and training (T). However, university rank seems to lead to lower performance via environmental influences.

Our results also suggest that university rank is associated with individual performance via selection (S). The one indirect effect that departs from this pattern involves the number of languages in which the participant considers him/herself fluent (S2). Students from higher-ranked universities are less likely to be fluent in more than one language (Figure. 1, Path a), and fluency in more than one language increases individual performance (Figure 1, Path b). Consequently, better ranking mediated by fluency in other languages decreases individual performance (Figure 1, Path a*b). This unexpected finding may be explained by the fact that the highest-ranked universities are typically from English-speaking countries, where fluency in multiple languages is rare. Therefore, Hypothesis 1 is mostly supported.

Table 5 Indirect effects of university rank on individual performance

	(1)	*(2)*	*(3)*	*(4)*	*(5)*
	Unstandardised coefficient direct effect (after controls) [Path c']	*Unstandardised coefficient direct effect (after controls) [Path b]*	*Variance explained (R2)*	*Indirect effect (after controls) [Path a*b]*	*Effect size of indirect effect (κ2 in %)*
Selection [S]					
S1: General skills	–0.001705**	105.675380**	0.031113	–0.000400**	1.646
S2: Number of languages fluent	–0.002016**	1.619113**	0.009362	0.000052**	0.248
S3: Working language fluency (English)	–0.001399**	1.912180**	0.007745	–0.000135**	0.482
S4: Prior international experience	–0.001467**	0.228956**	0.041094	–0.000242**	1.171
S5: Cultural intelligence	–0.001600**	11.072710**	0.032920	–0.000070**	0.336
Environment [E]					
E1: Self-efficacy	–0.001485**	0.071218**	0.018584	0.000018**	0.159
E2: Motivation	–0.001756**	0.154947**	0.008107	0.000044**	0.235
E3: Readiness to invest more time	–0.001836**	1.789840**	0.010871	0.000022**	0.117
E4: Preference to be on an achievement-oriented team	–0.001822**	–0.453472*	0.009083	0.000005*	0.026
Training [T]					
T1: Intellectual contribution	–0.000966**	30.286610**	0.159132	–0.001002**	5.021
T2: Leadership/coordination skills	–0.001934**	1.107311**	0.010446	–0.000033**	0.161
T3: Technical skills	–0.000654*	28.936900**	0.111683	–0.000879**	3.276
T4: Writing skills	–0.000520*	30.937650**	0.152511	–0.001018**	3.869
T5: Communication frequency	–0.001469**	2.410901**	0.020195	–0.000020**	0.174

Table 5 Indirect effects of university rank on individual performance *(continued)*

	(1)	*(2)*	*(3)*	*(4)*	*(5)*
	Unstandardised coefficient direct effect (after controls) [Path c']	*Unstandardised coefficient direct effect (after controls) [Path b]*	*Variance explained (R2)*	*Indirect effect (after controls) [Path a*b]*	*Effect size of indirect effect (κ2 in %)*
			Envy [En]		
En1: Formal leader role less peer assessed leadership	–0.001103**	–13.800912**	0.156752	0.000210**	2.415
En2: Interaction frequency less peer assessed collegiality	–0.001187**	–14.034164**	0.125708	–0.000273**	2.473
			Arrogance [A]		
A1: Overall team contribution (Self less teammate average)	–0.001029**	–18.176610**	0.147983	–0.000319**	2.969
A2: % of work completed (Self less teammate average)	–0.001271**	–0.443951**	0.023089	–0.000039**	0.354
A3: Formal leader role (Self less teammate average)	–0.000477**	–3.560803**	0.029949	–0.000198**	2.002
A4: Team commitment‡	–0.001345**	–0.072195**	0.006909	–0.000045**	0.234
			Relationship [R]		
R1: Collegiality	–0.001391**	1.642200**	0.027989	–0.000066**	0.586
R2: Number of non-instrumental conversations	–0.001485**	–2.656851**	0.005203	–0.000032**	0.156
R3: Conflict frequency‡	–0.001350**	–5.139720**	0.042877	0.000053**	0.502
R4: Team identification	–0.000922**	–1.473144**	0.009283	–0.000033**	0.300

Notes: *p < 0.05, ** p < 0.01; ‡ interpreted as opposite from other indicator.

Our results also suggest that university rank is associated with individual performance via selection (S). The one indirect effect that departs from this pattern involves the number of languages in which the participant considers him/herself fluent (S2). Students from higher-ranked universities are less likely to be fluent in more than one language (Figure. 1, Path a), and fluency in more than one language increases individual performance (Figure 1, Path b). Consequently, better ranking mediated by fluency in other languages decreases individual performance (Figure 1, Path a*b). This unexpected finding may be explained by the fact that the highest-ranked universities are typically from English-speaking countries, where fluency in multiple languages is rare. Therefore, Hypothesis 1 is mostly supported.

The results pertaining to the indicators of the environment (E) were unanticipated. Evidently, the more nurturing and inspiring academic environment of the higher-ranked universities does not always inspire and motivate, as the university rank was found to lower self-efficacy (E1), motivation to work hard (E2) and the readiness to invest more time in the project (E3). Despite these adverse mediating effects, the framework shows that higher university rank still leads to better performance (Figure 1, path b). Interestingly, the university rank predicted a desire to be on an achievement-orientated team (E4) (as hypothesised), but this desire had a detrimental effect on performance (contrary to our hypotheses). In general, our data suggest that the influence of university rank due to a university's environment is disadvantageous. Therefore, Hypothesis 2 was not supported.

All the hypothesised indirect effects of Training (T) were confirmed. That is, university rank is advantageously associated with intellectual contribution (T1), leadership/coordination skills (T2), technical skills (T3), writing skills (T4) and communication frequency (T5). All of these, in turn, are associated with individual performance. As such, university rank seems to result in higher individual performance due to skills that can be trained at university. Therefore, Hypothesis 3 is supported.

Concerning EAR, about half of the hypothesised indirect effects regarding envy and an inadequate relationship focus were supported. The effects of arrogance were not fully supported either. Regarding Envy (En), the university rank was found to be disadvantageously associated with envy as measured by the "net" objective less subjective assessment of leadership role (En1) (Figure 1, Path a). En1, in turn, lowered the individual performance of university graduates (as anticipated) (Figure 1, Path a*b). Unexpectedly, university rank was advantageously associated with envy as measured by the "net" objective less subjective assessment of collegiality (En2) (Figure 1, Path a). En2, in turn, also increased individual performance, contrary to our initial expectations (Figure 1, Path a*b). Therefore, Hypothesis 4 was partially supported.

None of the anticipated indirect effects of Arrogance (A) were confirmed. Compared to the assessments of teammates, students from higher-ranked universities actually tended to provide lower self-evaluations (unanticipated) regarding overall team contribution (A1), per cent of work completed (A2) and formal leadership (A3). Each of these indicators, in turn, unexpectedly increased individual performance. As expected, higher university rank was found to lead to lower team commitment (A4) (Figure 1, Path a), which in turn, increased individual performance, as team commitment reduced performance (Figure 1, Path a*b). Therefore, Hypothesis 5 was not supported.

Table 6 Summary of the results

Hypotheses	*Results*	*Findings: the direct effect of university rank on the mediator*	*Findings: the indirect effect of university rank on performance*
H1 (Selection): Rank → more selective → better performance University rank is positively associated with performance due to the more stringent selection criteria applied by higher-ranked universities.	Partially supported	• Rank → stronger general skills • Rank → fluent in fewer languages • Rank → more working language fluency • Rank → more prior international experience • Rank → more cultural intelligence	• Rank → stronger general skills → better performance • Rank → fluent in fewer languages → lower performance. • Rank → more working language fluency → better performance • Rank → more prior international experience → better performance • Rank → more cultural intelligence → better performance
H2 (Environment): Rank → nurturing, inspiring academic environment → performance University rank is positively associated with performance due to the nurturing and inspiring environment provided by higher-ranked universities	Not supported	• Rank → lower self-efficacy • Rank → lower motivation • Rank → lower willing to invest time in the project • Rank → more achievement orientated	• Rank → lower self-efficacy → lower performance • Rank → lower motivation → lower performance • Rank → lower willing to invest time in the project→ lower performance • Rank → more achievement orientated → lower performance
H 3 (Training): Rank → better training → better performance University rank is positively associated with performance due to better training provided by higher-ranked universities.	Supported	• Rank → stronger intellectual • Rank → better leadership/coordination skills • Rank → technical skills • Rank → writing skills • Rank → more frequent communication.	• Rank → stronger intellectual → better performance • Rank → better leadership/coordination skills → better performance • Rank → technical skills → better performance • Rank → writing skills → better performance • Rank → more frequent communication → better performance

Table 6 Summary of the results

Hypotheses	*Results*	*Findings: the direct effect of university rank on the mediator*	*Findings: the indirect effect of university rank on performance*
H4 (Envy): Rank → envy → lower performance University rank is negatively associated with performance evaluations due to the envy graduates from higher-ranked universities experience from their colleagues with less prestigious academic pedigree	Partially supported	• Rank → no consensus on leadership • Rank → consensus on collegiality	• Rank → no consensus on leadership → lower performance • Rank → consensus on collegiality → better performance
H5 (Arrogance): Rank → arrogance → lower performance University rank is negatively associated with performance evaluations due to the arrogance of colleagues from higher ranked universities towards their colleagues from lower-ranked universities.	Not supported	• Rank → consensus on contribution to the team • Rank → consensus on percentage of work done • Rank → consensus on leadership • Rank → lower team commitment	• Rank → consensus on contribution to the team → better performance • Rank → consensus on percentage of work done → better performance • Rank → consensus on leadership → better performance • Rank → lower team commitment → better performance
H6 (Relationship): Rank → poor relationship → lower performance University rank is negatively associated with performance due to an excessive focus on the task at the expense of damaged relationships with colleagues.	Supported	• Rank → more collegiality • Rank → less instrumental conversations • Rank → more conflicts • Rank → less team identification	• Rank → more collegiality → better performance • Rank → less instrumental conversations → better performance • Rank → technical skills → better performance • Rank → more conflicts → lower performance • Rank → less team identification → better performance

Finally, regarding the neglect of interpersonal relationships (R), university rank was negatively associated with non-instrumental conversations (R2) (Figure 1, Path a) and positively associated with task conflict (R3) (Figure 1, Path a). R2 leads to higher performance (unanticipated) (Figure 1, Path a*b) and R3 lowers performance (anticipated) (Figure 1, Path a*b). Interestingly, university rank was advantageously associated with collegiality (R1) (unanticipated) (Figure 1, Path a), which, in turn, lead to better performance (anticipated) (Figure 1, Path a*b). University rank was also disadvantageously associated with team identification (R4) (anticipated) (Figure 1, Path a), which in turn, lead to more individual performance (unanticipated) (Figure 1, Path a*b).

In sum, students from higher-ranked universities mostly have less relational attitudes (they have more collegiality, as an exception but they generate more conflict, engage in fewer non-instrumental conversations while having less team commitment and identification). Furthermore: (1) more collegiality increases performance (anticipated); (2) more conflicts reduce performance (anticipated); (3) less non-instrumental conversations increases performance (unanticipated); (4) and less team identification increases performance (unanticipated). Therefore, their lack of relational skills does not impact performance for three of the four indicators (R1, R2 and R4). The only exception is that the more conflicts (R4) they generate, the lower their performance. Therefore, Hypothesis 6 is partially supported. Table 6 presents a summary of our results.

5 Discussion

The present study addressed a simple but important question that prospective students and employers ask when considering university ranks either as a selection criterion for a university or an indicator of future performance of a job applicant. Namely, we ask: Does academic pedigree predict job performance? Both our review of the literature and our empirical tests showed that it is not a question with a yes or no answer. Education is a complex endeavour, one that is not limited to the acquisition of technical knowledge. Education also shapes attitudes, aspirations, as well as how we treat and are treated by others. In the modern team-based, constantly-changing, increasingly virtual workplace, these factors often contribute more to employee effectiveness than bare technical knowledge and skills. Likewise, performance is a multi-dimensional construct. The more complex the job, the more complex its resulting definition of performance and academic pedigree may affect as well as predict different aspects of performance differently.

We developed a holistic framework that integrates both positive and negative effects of academic pedigree on different aspects of performance, which we integrated into a multi-factor SET-EAR framework, providing a road-map for future study. Using a large international sample of students from hundreds of universities with differing ranks, we compared the performance of those students on an eight-week international business consulting project. The students worked in GVTs, which allowed us to capture the quality of work they produced, their ability to work on a team, their communication and leadership skills as well as other essential competencies for the modern workplace.

The results confirmed that, overall, academic pedigree, as measured by university rank, is positively correlated with some measures of performance and negatively with others. As per our SET-EAT framework, our tests provided partial support for the effects that we compiled from prior literature and summarised in our framework. Specifically, our results suggest that due to stricter selectivity and superior training, students from higher-ranked universities indeed get higher performance ratings. Contrary to our expectations, we did not find support for the hypothesis that the more nurturing and inspirational academic environment at higher-ranked universities leads to

better performance. We also found partial support for the hypotheses that the effects of envy of co-workers from lower-ranked universities can hurt the performance of their colleagues with superior academic pedigree. The notion of the supposed arrogance of students from higher-ranked universities was not supported by the data. However, it was found that, indeed, their excessive focus on the task, at the expense of interpersonal relationships, can adversely affect their performance.

Our study contributes to employee selection and talent identification literature. The GVT context of our study appears particularly relevant in the light of increasing reliance on virtual and international collaboration (Jimenez et al., 2017; Taras et al., 2019). Our results indicate that university rankings should not be used as a sole linear indicator of an applicant's future performance. Our SET-EAR framework provides a road-map for future research and a more nuanced view of how academic pedigree may interact with performance, particularly in GVTs.

5.1 Implications for future researchers

While research into the predictive power of academic pedigree concerning future job performance has been ample, most studies tended to limit the variety of factors and mechanisms through which education can affect performance. Furthermore, rarely have different aspects of performance been assessed in one study. The present study evaluated the relationship along multiple dimensions of performance and considered a variety of positive and negative effects. It provides a foundation for a more nuanced approach to understanding the effects and predictive power of university rankings.

The study also contributes to the talent management literature, which has been criticised for lacking an academic perspective (Collings et al., 2011). Specifically, we show that academic pedigree may indeed be an indication of talent. This is especially relevant to the discussion on talent identification, which has remained rather unexamined, as broader organisational concerns with respect to talent management have been in the focus of previous studies (McDonnell et al., 2017).

Second, most previous studies have used various university ranking systems in order to assess the labour market positions of college graduates (e.g., Hartog et al., 2010; Karabel and McClelland, 1987). However, these studies were mainly conducted within the borders of one specific country. We extend the literature by examining a large international sample of universities (294 universities in 79 countries). To identify university rankings, we utilised the Webometrics Ranking of World Universities (WO).

Our study also contributes to the existing literature by extending research beyond examining the effect of academic pedigree on financial measures, such as post-graduation income or employability (e.g., Zhang, 2005) and instead examine the effects on performance. Academic pedigree often becomes a self-fulfilling prophecy where graduates from better schools have an easier time finding jobs, commanding higher salaries, and being assigned more responsibilities and resources. This triggers a virtuous cycle that only widens the career success gap between those who graduated from more versus less prestigious universities, but it does not answer the question of whether or not such preferential treatment based on academic pedigree was justified in the first place.

Our study suggests that at least sometimes graduates from top universities may not perform better than their counterparts from lower-ranked universities. Such factors as envy, arrogance, and neglect of interpersonal relationships may lead to adverse effects in the workplace.

With respect to envy, we reconfirm past research showing that those who are envied receive lower individual performance from their peers (Cohen-Charash and Mueller, 2007; Fiske, 2010; Tai et al., 2012). However, we unpack the concept of envy further, and university rank was positively associated with the indicator of envy relating to leadership but was negatively associated with the indicator of envy relating to interaction. One interpretation of these findings is that different reasons for envy exist, each having a potentially different effect on collegial interaction and subsequent assessments.

Our results regarding arrogance are particularly interesting and indicate promising future research avenues. As we found, students from higher-ranked universities evaluated their input to the team as lower than their peers (A1, A2 and A3). One explanation would be that the standards of performance at higher-ranked universities are much greater than those at universities with a lower rank. However, an alternative explanation involves a type of "halo" effect (Nisbett and Wilson, 1977). That is, students from a lower-ranked university may grant their colleagues from higher-ranked universities inflated assessments, perhaps awed by a superior academic pedigree.

Finally, our findings regarding an inadequate focus on relationships are intriguing. University rank had a disadvantageous association with self-based measures of an inadequate focus on relationships (R2, R3 and R4) but an advantageous association with a peer-based measure (R1). This finding re-enforces our earlier conjecture regarding a "halo" effect (Nisbett and Wilson, 1977). Team identification was also disadvantageously associated with individual performance. Though we conjecture a self-sacrificial orientation, again, further inquiry is suggested.

5.2 Implications for practitioners

Our efforts should also be of interest to students deciding as to which university to apply and employers deciding as from which universities to hire. First, such decisions are often made in the global context where academic and career choices are not confined to the borders of one country. Comparing the rankings of universities in different countries may not be easy. We have identified WO as a university ranking system that strongly correlated with other ranking systems but appeared to be less biased and more encompassing than alternatives.

Second, both students and employers may be relieved to know that students from universities with a higher rank do tend to display higher individual performance. Our study suggests that at least part of this relationship can be explained by a more rigorous selection process and the possession of skills that can be trained at university, again providing further confidence to those that wish to use rankings as a decision-making criterion. While there is a positive relationship between university rank and performance, measuring skills will likely lead to better hiring decisions than using university rankings alone.

Finally, we demonstrate that team commitment and identification are disadvantageously linked with individual performance. If our conjecture regarding self-sacrifice is correct, it might be best to include the support offered to colleagues in the assessment of work-group members.

We conclude with addressing one more time the main question practitioners would ask in the context of our study: Should those from higher-ranked universities be hired rather than applicants from lower-ranked universities? The answer may depend on the difference in compensation. Our effect size estimates suggest that for every standard deviation improvement in university rank, the predicted improvement in performance is approximately 0.12 standard deviations. Expressed differently, we estimate that a 1000- position increase in university rank (Webometrics lists more than 24,000 universities) is associated with a predicted 1.9%

improvement in performance. Thus, the predicted difference in the performance of a student from a top university (e.g., University of Toronto: rank 17) versus a student from a university with an average rank (e.g., Riga International School of Economic and Business Administration: rank 10,041) is 19%. It is up to the managers to decide if this difference in performance is worth any difference in pay.

5.3 Limitations and directions for future research

While our study offers many advantages over prior research that assessed the effects of academic pedigree on performance based on analysis of employability and pay, it is not without limitation. First, we used a lesser-known WO university ranking system. However, one can also see this choice as an advantage of our study. As noted earlier, WO strongly correlates with other more popular rankings. It also includes a larger number of universities allowing us to test our hypotheses in a larger sample. However, and most importantly, it is the only non-commercial university ranking system that relies on objective measures (Aguillo et al., 2008; QS and THE; Baty, 2015). Nevertheless, although WO was the optimal choice for our study, we recommend future researchers explore the predictive power of different ranking systems.

Second, while we relied on multiple sources (peers, experts, organisational records) and aspects of performance (effort, quality of output and more), and although our measures of performance were similar to those used in the corporate world, one notable limitation of these measures is their subjective nature. It would be hard to find objective measures of performance on consulting projects, and this is why organisations, as well as we in this study, relied mostly on experts and peer evaluations. However, future research may revisit the relationship between university rank and performance in jobs that are more conducive to objectively measured performance.

Third, it is also worthwhile noting that while the universities represented in our student sample spanned thousands of ranking positions, we did not have students from the most elite universities. Thus, the relationship between university rank and performance that we observed may apply only to the middle of the range ranks but not to the few universities with the best ranks. While our sample had several universities with very high rankings, such as the University of Toronto, the University of North Carolina at Chapel Hill, INSEAD, London School of Economics and Texas A&M University, our sample did not include the most elite universities, such as Harvard or Stanford. Indeed, these universities have budgets comparable in size to the GPD of small countries, their brands are recognised globally, and they attract the very best applicants. We hope future research will address this limitation and re-test the relationship in a sample that also includes the most elite universities.

Fourth, another limitation of our study is that its result applies only to recent graduates. It would be reasonable to assume that the correlation between the university rank and the performance of its graduates attenuates over time and it would be advisable to use recent performance as a predictor of future performance, rather than rely on the university rank. However, it is also possible that the correlation between university rank and performance may actually increase over time. If graduates from better schools are more likely to get better jobs, be trusted with more challenging projects, receive more pay and resources, they may enjoy more opportunities to gain valuable experience and skills. This initial advantage may accumulate over time, at some point resulting in a significant difference in competences and performance. This effect is commonly known as the Matthew Paradox: those who have even more shall be given to

them, and those who do not, even what they have will be taken away from them. We encourage future researchers to explore how the effect changes over time

Lastly, our sample and study settings offered many advantages. Our sample was large and international, and all the tens of thousands of the study participants worked on the same business consulting project, allowing for a direct comparison of their performance. Most of our study participants had at least some work experience. It would be hard or impossible to find an organisation of a comparable size where so many employees complete similar work and whose performance could be assessed to understand how their academic pedigree relates to their performance. Nevertheless, it was still a convenience sample, which poses some threat to the generalisability of our findings.

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