THE EDUCATIONAL CONTEXTS OF ISLAMIST ACTIVISM:
ELITE STUDENTS AND RELIGIOUS INSTITUTIONS IN EGYPT*

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The literature on student activism finds that protesters come from prestigious universities and from the social sciences and humanities. Studies of political Islam, however, emphasize the prominence of engineering and medical students from secular institutions. Contributing to both literatures, this paper investigates Islamist students targeted by security forces in Egypt following the coup of 2013. Matching 1,352 arrested students to the population of male undergraduates, it analyzes how the arrest rate varied across 348 university faculties. We find that activists came disproportionately from institutions that provided a religiously inflected education. This contradicts the conventional emphasis on secular institutions. Most importantly, we find that Islamists tended to come from faculties that required higher grades and that admitted students who studied science in secondary school. Controlling for grades, engineering and medicine were not especially prominent. These findings suggest that Islamist students conform to the more general pattern: political activism attracts the academic elite.

In recent years, a great deal of attention has been paid to the process of Islamist mobilization (Hafez 2003; Schwedler 2006; Wickham 2002; Wiktorowicz 2004). By comparison, the social backgrounds of Islamist activists remain less well understood.[1] This reflects a more general problem for scholars of social movements: while conventional politics is easily studied by surveying voters or matching electoral results to constituencies, the characteristics of activists are often elusive. Protest event data culled from newspaper reports and government statistics, the staple of social movements research, are usually silent on the social backgrounds of participants. Surveys of protestors can generate insights into the class backgrounds of participants (Eggert and Giugni 2012, 2015), but rarely match activists to the underlying population (a notable exception is Saunders 2014). Data on movement organizations similarly provide little specific information on the social context of membership. In rare instances when hundreds of individuals participating in a movement can be identified (most often due to death or arrest), then it is worth the painstaking effort to reconstruct their social context—where they lived, worked, or studied (Kawalerowicz and Biggs 2015; McAdam and Paulsen 1993).

This paper uses ecological data to explore the educational backgrounds of Islamist university students in Egypt. We examine the claim that students of medicine and engineering are more likely to join Islamist movements—an assertion that has become common currency in both scholarship and public discourse on the rise of organized political Islam (Ahmed 2011: 126; Arjomand 1988: 201; Beinin 2005: 123-124; Brown 2012: 89; Burgat 2003: 158; Calvert 2008: 4; Deneoux 2011: 60; Entelis 1997: 61; Espositio 1998: 256; Faksh 1997: 37n11;

Gerges 2014: 30; Goldberg 1992: 19; Huntington 1996: 112; Kepel 2008: 344; Lawrence 1989: 197; Robinson 2004: 117-118; Roy 1994: 49; Waltz 1986: 656; Woltering 2002: 1135). It is also claimed that Islamists are overwhelmingly drawn from secular universities and rarely possess formal religious training. Although these generalizations are widely accepted in the literature on Islamist movements, previous analysis has not adequately compared activists with the underlying population from which they are drawn.

To conduct our analysis, we use unique data on 1,352 Islamist students arrested during the state's concerted repression of the Muslim Brothers after President Muhammad Mursi was overthrown in 2013. This constitutes the largest sample yet available for studying the educational ecologies of political Islam. Matching these activists to the population of male undergraduate students, we analyze how the arrest rate varied across 347 university faculties in forty-three institutions. Students at the end of secondary school take an examination (*al-thanawiyya al-ʿamma*) in either science or literature, and this enables us to rank university faculties using the grades of admitted students, and to classify them according to whether they require science.

We find that Islamist students came disproportionately from al-Azhar University, where students receive a formal religious education irrespective of their degree specialization. Thus the literature's claim that Islamist cadres and their leaders emerge from secular universities does not hold for contemporary Egypt. Analysis also reveals that Islamists tended to come from university faculties with more demanding entry requirements, and from faculties for which the science examination was a prerequisite. Controlling for grades, Islamists were no more likely to be drawn from engineering and medicine than from other faculties that required science. Given that the science examination is much more prestigious, these findings suggest that Islamist activism conforms to a general sociological pattern seen in the mobilization of Western university students: political activism attracts elite students.

ACTIVISM BY UNIVERSITY STUDENTS

Higher education is an incubator for oppositional politics, and its importance has increased with the inexorable growth of enrollment in universities worldwide. Systematic study of student activism began with the eruption of campus protests in the United States and Western Europe in the 1960s (Foster and Long 1970; Lipset and Altbach 1969). In John Meyer and Richard Rubinson's formulation, "the most politically active students are those with high social class backgrounds, high levels of academic ability,…and a high sense of social and political efficacy" (1972: 26).[2] The generalization is supported by multivariate analyses of left-wing protest in the United States since 1960. More selective universities had higher levels of mobilization (Blau and Slaughter 1971; Soule 1997; Van Dyke 1998; Van Dyke, Dixon, and Carlon 2007). Students with higher grades and pursuing academic rather than vocational subjects were also more likely to protest (Biggs 2006; Paulsen 1991; Sherkat and Blocker 1994). One explanation for this pattern is that elite students possess a greater sense of efficacy, feeling that as individuals they can comprehend and influence the political system (Corcoran, Pettinicchio, and Young 2015; Winston 2013). Longitudinal surveys demonstrate that personal efficacy helps to predict subsequent participation in protest (Finkel and Muller 1998; Paulsen 1991; Sherkat and Blocker 1994).

Studies of student activism also suggest a consistent pattern across academic disciplines: protesters are more likely to study social science or humanities (Jennings and Niemi 1981: 336; Kahn and Bowers 1970). Most of this evidence comes from Western democracies, where political activism is usually located on the left of the spectrum. An important exception is Dingxin Zhao's (2001) analysis of the Tiananmen Square movement in China in 1989 that finds the same overrepresentation of students from social sciences and humanities. In his explanation, "these disciplines teach ideas derived from Western civic culture and political thinking that are revolutionary in relation to indigenous political traditions" (Zhao 2001: 82;

2013: 207). The literature on student activism has largely ignored developments in the Islamic world. An international handbook (Altbach 1989) scans twenty-nine countries on five continents, but Turkey is the only Muslim-majority society. As the editor cautions, generalizations "may not hold true for the important . . . Islamic student movements" (Altbach 1989: 9). We address this lacuna below.

ISLAMIST ACTIVISM AND UNIVERSITY EDUCATION

When the literature on Islamist activists is juxtaposed with the literature on student protest, one puzzling anomaly emerges. The academic disciplines that generate Islamist activism seem to be engineering and medicine rather than the social sciences or humanities, or even religious subjects. The claim that Islamist activists tend to study engineering and medicine at university originated in a landmark study carried out by the political sociologist Saad Eddin Ibrahim (1980), who conducted thirty-four interviews with detained members of two Muslim Brother splinter groups active in Egypt in the 1970s.[3] Ibrahim found that cadres and leaders alike tended to have high educational attainment: all but five (twenty-nine out of thirty-four) were university educated, and over half were current university students, with the majority studying either engineering or the medical sciences. Subsequent studies of Egypt's Muslim Brothers and related Islamist groups reiterated Ibrahim's findings. Eric Davis analyzed trials of prominent Muslim Brothers who had been prosecuted in the 1950s and 1960s, and concluded that the movement drew its support from newly urbanized university graduates—"especially, in more recent times, engineers" (1984: 141). Ziad Munson, studying 179 arrests reported in U.S. diplomatic cables from the 1950s, claimed that the bulk of the Brothers' membership came from "the most Westernized and modernized segments of the population—students, engineers, doctors, and government bureaucrats" (2001: 492).

Separate analyses by Nazih Ayubi (1980, 1991: 82-84), Nemat Guenena (1986: 94-99), and Giles Kepel (1985: 214-221), again using trial and interview data, also found evidence that Egyptian Islamist movements recruited university students, and in particular, those taking either engineering or the medical sciences. Most recently, Hazim Kandil's (2014: 34-36) study of the contemporary Muslim Brothers detects a similar pattern based on informant testimony and biographies of the movement's current leadership. Scholars have also charted the ascendency of Islamists to the leadership of Egypt's major professional syndicates, especially doctors, dentists, engineers, and pharmacists (Baker 2003; Wickham 2002). Islamist science and engineering professors are also prominent in the faculty lounges of Egyptian universities (Bayat 2007: 170).

The association between studying engineering or medicine and becoming an Islamist travels beyond Egypt. Studies of Islamist mobilization in Tunisia, Turkey, and Iran also find that university graduates in medicine and engineering are a key source of recruits (Göle 1997: 56; Hermassi 1984: 43; Yann 1991: 247-248). In the most ambitious and systematic investigation, Diego Gambetta and Steffen Hertog (2016) compile a sample of 497 violent Islamists from Muslim-majority countries. Almost half of those with university education had studied engineering; "relative to graduates with other degrees they are four times more numerous than we would expect" (Gambetta and Hertog 2016: 32). This study is particularly noteworthy as the only one to compare the proportion of Islamist engineers to the baseline of engineers in the population. Another sample of 585 members of nonviolent Islamist groups— including Muslim Brothers in Egypt—reveals a slightly different pattern. Engineers are outnumbered by graduates of medicine, pharmacology, and natural sciences (Gambetta and Hertog 2009: 208–9).

The fact that university students and graduates are overrepresented among Islamist activists is not surprising, because this is typical of social movements in modern societies, except for the labor movement (Biggs 2015). Why, though, the association between Islamism and particular academic subjects—especially engineering and medicine? There are three

principal explanations. One is that students of these subjects, as compared to students of the humanities and social sciences, possess a technocratic mindset. "Scientists learn to ask questions," argue Gambetta and Hertog (2016: 148), "while engineering students, like followers of text-based religions, rely more strongly on answers that have already been given." Students that possess this cognitive disposition, it is argued, see the teachings of Islam as divinely endowed, ready-made solutions for society's ills, which they apply in the same manner as one might apply scientific knowledge to solve profane technical problems. This suggests a natural affinity between the mode and method of the applied sciences and literalist hermeneutics (Rashwan 2006: 90). A modern technical university education, it follows, can be more of a boon than a hindrance to Islamic activism (Dekmejian 1985: 113). A convergent claim, made by Kandil, is that Islamists recruit doctors and engineers, as opposed to students of the social sciences, because they favor "obedience over analytical thinking" (2014: 36). In his argument, a membership constituted by pliant engineers and uncritical natural scientists contributed to the Muslim Brothers' downfall in the years following the 25th January Revolution that ousted Husni Mubarak.

A second explanation is relative deprivation. Since the 1970s, Middle Eastern universities have overproduced science and engineering graduates, despite declining employment opportunities and widespread economic immiseration (Moore 1980). Scholars argue that this "lumpen intelligentsia" (Roy 1994: 85), faced with "educated unemployment" (Wickham 2002: Ch. 2), experience acute relative deprivation as a result of being denied the social status and the economic opportunities befitting their education.[4] Many of these alienated and frustrated graduates, this thesis suggests, join Islamist movements as a consequence of their economic marginalization (Ayubi 1980: 494-495; 1991: 82-83; Piscatori 1984: 29). The relative deprivation thesis has also been deployed counterfactually to explain the absence of doctors and engineers amongst violent Islamists in Saudi Arabia, where university graduates enjoy better employment prospects (Hegghammer 2010: 188). This does not explain, however, the large number of science and engineering graduates amongst second-generation Islamists in Western Europe, where relative deprivation is hardly relevant (Gambetta and Hertog 2016: Ch. 3; Laurence 2011: 70). Moreover, several Middle Eastern countries with the objective conditions for relative deprivation have not experienced Islamist mobilization.[5]

A third explanation, which derives its theoretical rationale from the social movements literature on student activism, is that Islamists are drawn from academic elites. Ibrahim anticipated this thesis when he observed that Egyptian Islamists tended to be admitted into university faculties that require very high scores on the examination taken in the final year of secondary school (1980: 439).[6] Ahmed Abdalla (1985: Ch. 8-10), in his history of the Egyptian student movement, noted that engineering students of various political stripes— including nationalists, socialists, and liberals—formed the leading edge of antigovernment protestors in the late 1960s. One engineering student attributed this tendency to the Ministry of Education's decision to place the highest-achieving secondary school students in faculties of engineering, "causing them to be prominent in politics as they were prominent in science" (cited in Ibid: 213).[7] This suggests an unexplored parallel with student activism in the West.

Besides emphasizing disciplines like engineering, the literature argues that Islamist activists lack formal religious training (Ayubi 1980: 494; Burgat 2003: 158; Zubaida 2010: 72-73). "Not only the Islamist leaders," noted Charles Kurzman, "but also the rank and file emerge disproportionately from secular universities" (2002a: 14; Denoeuz 2011: 60; Kurzman and Naqvi 2010). Conventional wisdom dictates that this lack of formal theological training reflects and reproduces a shift in religious authority away from traditional scholastic structures to lay Muslim publics. This shift, it is argued, followed the belated adoption of print capitalism across the Islamic world in the late nineteenth century (Anderson 1982; Cole 2002; Eickelman and Piscatori 2006: 111; Robinson 1993). A crisis of authority in Islam's clerical class, widely perceived as ineffective in the face of European colonial encroachment, compounded this trend (Kurzman 2002b; Moaddel 2002). After the dissolution of the Ottoman Empire, the emergence of mass Islamic social movements—led by a newly urban-

ized and literate class of teachers, government officials, and students—marked an unprece-
dented rupture with prior traditions of Islamic associationalism.[8] No longer did Muslims need
a formal religious education to speak publicly in the name of Islam. As Gregory Starrett
(1998) and others have chronicled, the privatization of Islamic associational activities accel-
erated in the 1970s, following the rise of new modes of Islamic revivalism and new forms of
socio-religious consumption that stood outside of traditional structures of religious authority
(Hirschkind 2006; Mahmood 2005). We now explore these assumptions as they relate to
contemporary Egypt.

CONTEXT AND SOURCES

After the 25th January Revolution in 2011, Egypt's Islamist movements emerged from
decades of semilegality to participate in the political process (Hamid 2014: Ch. 6-7; Wickham
2014: Ch. 9). Many organized openly, forming political parties, publishing newspapers, and
establishing offices and headquarters across the country. Their political activity culminated in
the election of Muhammad Mursi—from the Muslim Brother's Freedom and Justice Party—
as President in June 2012. One year later, a coup removed Mursi from office following
protests against his rule. Large-scale mobilization by Mursi's supporters was countered by a
concerted campaign of repression. The military regime eventually declared the Muslim Bro-
thers to be a terrorist organization. Egyptian human rights activists have documented over
40,000 arrests in the eighteen months following the coup (WikiThawra 2014a). The judiciary
has handed down mass death sentences, while torture against detainees is widespread (Amnesty
2014). Ironically, this repression was facilitated by the brief opening of democratization
between 2011 and 2013, which gave Egypt's security services unprecedented insight into the
structure and membership of the country's Islamist movements.

Documentation of this repression provides the data used here.[9] The Muslim Brothers
compiled evidence of human rights abuses to submit to the International Criminal Court
(personal correspondence Mona al-Qazzaz, Oct. 17, 2014). We focus on a list of 1,719 under-
graduates detained in the eighteen months following the coup. Information includes date and
place of arrest, the specific charge and court case number; university, faculty, and year of
study; home address and contact details for next of kin, including telephone numbers and
email addresses. We also searched the web for students' names to fill in missing information.
There are similarly detailed lists of 196 undergraduates who were killed, and 446 who were
excluded or suspended from university. To establish the reliability of the data, we compared
students' names with an online database compiled by Egyptian human rights activists of those
arrested and killed since the 2013 coup (WikiThawra 2014a, 2014b).[10]

The students in these three samples are young Islamists, predominantly Muslim Brothers,
who were involved in street protests and anti-coup activism organized under the umbrella of
the pro-Mursi National Alliance to Support Legitimacy. The Alliance comprised fifteen
Islamist movements, by far the largest and most significant of which was the Muslim Brothers
(Ketchley 2013, 2017: ch. 6).[11] In the eighteen months following the coup, all ranks and
branches of the Muslim Brothers were mobilized in an attempt to restore Mursi to office.
Interestingly, the state's concerted repression of the Brothers did not lead to the radicalization
of the movement.[12] Anti-coup protests during this period were overwhelmingly nonviolent
and followed the repertoire of contention pioneered during the 25th January Revolution
(Ketchley 2017: ch. 6). Despite several attempts by the Brothers to broker a broad front
against the new military-backed government, the anti-coup mobilization failed to attract
support from other opposition groups, particularly from secular and left-wing activists
(Ketchley 2013: 16-17). Because the process of becoming a Muslim Brother can take several
years, some of the students would not have been full members at the time of their arrest,
death, or exclusion.[13]

The most common places of arrest were on campus (forty-one percent) and at protests outside of university (thirty-five percent). A significant proportion of arrests occurred at home (fourteen percent). Detentions at checkpoints were nine percent. Students were most likely to be killed while protesting (88 percent).[14] Women were only a tiny minority of those arrested (two percent) and killed (three percent), because the regime tended to spare women from these severe forms of repression. These data therefore underrepresent the participation of women in Islamist mobilization. Women form a much higher proportion of students who have been excluded or suspended from university (thirty-nine percent). There is no reason to think that the data are subject to any other selection biases.

The university admissions process requires some further remarks. Most who pursue higher education go to a public university or al-Azhar; a small minority chooses private universities, technical institutes, or academies. Academic prestige in Egypt, unlike in the United States or the United Kingdom, attaches primarily to discipline rather than to institution. The exception to this rule is the prestigious American University of Cairo, but it educates less than 0.01 percent of Egyptian university students. Public universities do not form a hierarchical system as in the United States, from the flagship state campus to directional universities. Fees for public university range from $25 to $125 per academic year; students who cannot afford these fees can receive exemptions.

Admission into university is based on a student's grade in the examination taken in the final year of secondary school. Two years before taking the exam, students are streamed thematically, choosing a course of study focusing on either science or literature. Students in both tracks take Arabic literature, English language, and either French or German. In addition to these core subjects, students in the science track also study physics, chemistry, biology, and geology, while literature students take modules in history, geography, psychology, and philosophy. The science track is considered more difficult and thus more prestigious; some university faculties only admit students who have taken this exam. Less accomplished students often take the literature exam. After students have applied for a university place and their grades have been collated, then the entry requirements are published—a widely anticipated event, known as *al-Tansīq*. These entry requirements provide our measure for the selectiveness and prestige of each academic discipline. The entry marks are available online and are updated annually (Tansiq 2013a, 2013b, 2013c, 2013d, 2014a, 2014b).

Formal religious instruction is traditionally received at al-Azhar University, historically one of the most prestigious institutions for Sunni Islamic education. In the 1960s, the University was brought within the ambit of state control: female students were admitted for the first time and new faculties opened to teach nonreligious subjects, such as medicine, engineering, and business studies.[15] Still, all students at al-Azhar, regardless of their chosen specialization, must pass a religious component as part of their degree. Secondary school students seeking admission into al-Azhar are also streamed into science and literature sections, in addition to being tested on their knowledge of Islam. Most of these applicants have studied in al-Azhar's national network of primary and secondary schools, where they are expected to have memorized the Qurʾan by the age of fifteen. For our purposes, it is important to note that scholarship on Islamism in Egypt has hitherto assumed that activists are to be "found mainly among middle-class urban students of the secular universities, not among the religiously educated students of al-Azhar's colleges" (Ayubi 1980: 494; Davis 1984: 143). This deficit is attributed to the supposed antipathy Islamists hold for the country's religious institutions and traditional Islamic scholasticism. This contrasts with the Dar al-ʿUlum, which is notable in Egypt for being the sole faculty in the public university system that provides religious instruction, albeit in the context of modern pedagogical training. The Dar al-ʿUlum counts several prominent Islamists among its alumni and former staff and has historically drawn the support of the Muslim Brothers, who endorsed its reform-minded mission of providing modern teacher training in an Islamic context (Kalmbach 2011).[16] While the status of the Dar al-ʿUlum has been significantly diminished in recent years, primarily due to the

opening of secular faculties of education, scholars continue to associate it with Islamist activism (Bayat 2007: 170).

In matching the number of activists to the number of university students, we exclude private universities, technical institutes, and academies. These accounted for only a small minority of students arrested (nine percent) and killed (eleven percent), and for none of the exclusions. Data on Egypt's twenty-three public universities are collated by the Higher Council for Universities (2014). The Council's office in Cairo University holds a volume for the 2013-2014 academic year, recording the number of undergraduates by institution, faculty, sex, and year of study. Al-Azhar University (2013a, 2013b), which is administered separately, has information on the number of students graduating in the 2012-2013 academic year, the last year for which data are available, by faculty, institution, and sex. To estimate the number of students enrolled at al-Azhar, we multiply the number of graduates by the duration of their degree.[17]

METHOD

Because so few women were arrested, our analysis is confined to men.[18] The combination of institution and faculty defines the unit of observation. There are forty-three institutions: fifteen branches of al-Azhar University, and twenty-eight branches of twenty-three public universities. Most institutions comprise several faculties. The number of observations is 347. A total of 1,687 male students in these institutions were arrested, and 1,352 have sufficient information to identify their faculty. The dependent variable is the number of male students arrested, which is naturally modeled with negative binomial regression. The number of arrests, μ_{if} (indexed by i for institution and f for faculty) is estimated by:

$$\widetilde{u}_{if} = \exp\left(\sum \beta_k X_{kif}\right) S_{if} \delta_{if}$$

The number of male students, S, is the exposure variable. With twice as many students, we expect twice as many arrests. The error term, δ, is drawn from the Gamma distribution with mean of 1 and variance of α. The number of arrests relative to the number of students will be explained by several independent variables, X_k. Table 1 provides descriptive statistics for all variables (the correlation matrix is Appendix table A1).

Table 1. Summary Statistics

Variable	Range	Mean	(Std. Dev.)
Males arrested	0 – 118	4	(10)
Number of male students	12 – 19,047	1,674	(2,565)
Faculty's minimum grade (0-1)	0.50 – 0.99	0.81	(0.16)
Faculty requires science examination	0 – 1	0.52	
Faculty is engineering	0 – 1	0.07	
Faculty is medical science	0 – 1	0.15	
Faculty is Dar al-ʿUlum	0 – 1	0.01	
Institution is al-Azhar	0 – 1	0.13	
Institution's number of faculties, logged	0 – 2.94	2.45	(0.60)
Institution's distance from Cairo, sq root	0.22 – 2.61	1.16	(0.62)

Note: Each observation comprises one faculty in one institution; $N = 348$

The minimum admission grade varies by faculty. The examinations for public universities and for al-Azhar are graded on different scales (having a maximum of 410 and 650, respectively). We measure grades as a percentage relative to the maximum; in both cases, a pass is 50 percent. These percentages are commensurable across the two systems because they attract a similar caliber of students.[19] Table 2 shows the distribution of grades across subjects, along with the number of male students and the number arrested. Some subjects, like medicine or engineering, require very high grades at every institution. Likewise some subjects, like social work, are consistently near the bottom. Other subjects, however, such as education, vary markedly across institutions; in such cases, grades tended to be lower in peripheral institutions, as measured by distance from Cairo. Overall, however, grades vary far more by subject than by institution.[20]

Table 2. Descriptive Statistics by Faculty

Faculty	Males arrested	Male students	Minimum grade (percent)		Science prerequisite
			Min.	*Max.*	
Agricultural engineering	0	448	94	94	Y
Agriculture	48	13,375	50	84	Y
Applied arts	7	933	92	93	Y
Arabic language	20	5,448	53	67	
Archaeology	0	1,247	86	92	
Art	2	1,575	69	92	
Business studies	268	130,145	71	88	
Computer science	20	8,135	91	92	Y
Construction	4	2,689	64	73	Y
Dar al-ʿUlum	20	7,987	56	59	
Dentistry	22	5,299	97	97	Y
Education	88	25,834	50	91	
Engineering	273	75,044	93	98	Y
Fisheries science	0	218	85	90	Y
Home economics	0	180	50	52	Y in al-Azhar
Islamic missionary	12	1,320	81	81	
Islamic studies/Arabic	12	15,156	52	73	
Languages	0	1,378	93	94	
Languages/translation	36	1,659	89	89	
Law	56	100,774	50	61	
Law/Islamic studies	66	20,004	73	80	
Literature	35	47,208	50	76	
Media studies	5	1,153	91	95	
Medicine	96	23,496	97	99	Y
Nursing	7	4,812	77	94	Y
Nursing technician	0	1,369	50	83	
Origins of religion	45	15,488	59	67	
Physical Education	15	16,565	60	87	
Pharmacology	89	14,880	96	97	Y
Physiotherapy	1	896	96	96	Y
Political science and economy	1	1,088	92	95	
Science	93	21,102	83	95	Y
Social work	2	5,110	53	60	
Tourism	1	4,249	50	62	
Urban planning	0	697	92	92	Y
Veterinary medicine	8	5,588	87	96	Y

To define the broad category of scientific and technical subjects, we use the divide between science and literature that is fundamental to the education system. About half the faculties require students to take science, while the remainder admit students with either examination. This division is shown in table 2. Scientific faculties—as we will term them—tend to have higher grades: the average is 90 percent, compared to 72 percent for the remaining faculties. As well as a binary variable for scientific faculties, we construct binary variables for engineering and for medical sciences (including dentistry and pharmacology).

Just as the literature emphasizes the importance of technical and scientific subjects, so it emphasizes the significance of secular over religious education. A binary variable is coded for al-Azhar University.[21] Conventionally, this variable would be expected to have a negative effect. A binary variable is constructed for the one Islamic faculty in public universities, the Dar al-ʿUlum. Given the Dar al-ʿUlum's history of producing Islamist activists, we expect this variable to have a positive effect.

Two control variables are entered at the institutional level. The number of faculties captures the distinction between a main campus and satellite branches, some of which comprised a single faculty.[22] Geographical location affects the accessibility of sites of contention and also the degree of repression by the state. We expect that students nearer to Cairo could have had more opportunity to protest. Likewise, we suspect that the Egyptian state would concentrate repression at the center rather than the periphery. After mapping each institution to its district, we measure the distance from the district's capital (in hundreds of kilometers) to Cairo, transformed by taking the square root.[23]

RESULTS

Table 3 presents the results. Coefficients are expressed as incidence-rate ratios (the exponent of β). For binary variables, this ratio represents how much it multiplies the arrest rate. Grades are rescaled to the range 0 to 1 (75 percent is .75) to increase comparability with the binary variables. Standard errors are adjusted for clustering by institution, thus increasing the stringency of statistical significance. The high value of α across all models indicates pronounced overdispersion (compared to a Poisson distribution, where $\alpha = 0$).

Model 1 follows the literature in focusing on particular subjects without considering grades. Students in scientific faculties are arrested at twice the rate of students in other faculties (excepting the Dar al-ʿUlum). There is no additional effect for engineering, but there is a strong and statistically significant effect for medical sciences. The rate of arrests for students in medical sciences is more than triple (2.10×1.69) than for students in nonscientific faculties. The arrest rate is twice as high for students studying in the Dar al-ʿUlum compared to other nonscientific faculties. Students at al-Azhar University are almost six times more likely to be arrested than those at public universities. Arrests increase markedly with the institution's size; the arrest rate is predicted to be six times higher at the largest campus (Cairo University, with nineteen faculties) compared to a branch with one faculty. Geographical location has no effect.

Model 2 adds the minimum grade in each faculty.[24] The effect is statistically significant and substantively important. Compared to a faculty that required grades of 60 percent, a faculty that required 90 percent is predicted to experience 1.6 times as many arrests (4.48 to the power of 0.3). The inclusion of grades reduces the incidence rate (compared to model 1) for scientific subjects, for engineering, and for medicine. In other words, some portion of those effects reflects high admission standards. The science requirement, however, remains statistically significant and substantively important. The inclusion of grades does not, by contrast, reduce the effects of the two religious variables. Figure 1 depicts how the predicted arrest rate varies by grade and by subject. The baseline is the arrest rate in a nonscientific faculty (excepting the Dar al-ʿUlum) admitting students with a minimum grade of 85 percent,

Table 3. Predicting the Number of Male Students Arrested: Negative Binomial Regression with Number of Male Students as Exposure[a]

	Model 1			Model 2			Model 3		
	irr[b]	se[c]	p[d]	irr	se	p	irr	se	p
Faculty's minimum grade (0-1)				4.48	2.43	.01 **	8.46	3.85	.00 ***
Faculty requires science examination	2.10	.23	.00 ***	1.78	.21	.00 ***	1.71	.23	.00 ***
Faculty is engineering	1.14	.15	.32	1.01	.15	.94	1.05	.13	.70
Faculty is medical science	1.69	.40	.03 *	1.43	.36	.16	1.13	.24	.56
Faculty is Dar al-ʿUlum	2.34	.60	.00 ***	3.10	.85	.00 ***	4.46	1.14	.00 ***
Institution is al-Azhar	5.68	1.44	.00 ***	5.70	1.43	.00 ***			
Institution's number of faculties, logged	1.86	.40	.00 **	1.75	.39	.01 *			
Institution's distance from Cairo, sq root	.83	.19	.41	.86	.20	.53			
Intercept for each institution		no			no			yes	
alpha (coefficient)	.82	.17	.00 ***	.77	.18	.00 ***	.18	.04	.00 ***
N		348			348			348	
Number arrested		1,352			1,352			1,352	
Number of students		582,549			582,549			582,549	

Notes: [a] Each observation comprises one faculty in one institution. [b] irr: incidence-rate ratio; [c] se: standard error, adjusted for clustering by institution; [d] p: p-value (two-tailed), *** $p < .001$, ** $p < .01$, * $p < .05$

which approximates the median minimum grade across all faculties.[25] The relative change in the arrest rate is measured on a logarithmic scale. The graph shows that the estimated arrest rate for the Dar al-ʿUlum is based on only three faculties (albeit numbering 8,000 students). The difference between that and the estimate for scientific subjects is just statistically significant ($p = .04$).

Model 2 assumes that grades have the same effect across faculties and institutions. Entering an interaction term can test variation, though these results must be tentative given the modest number of observations. There is no evidence that the effect of grades differs between al-Azhar University and public universities ($p = .37$ for the null hypothesis that there is no interaction). This lends support to our assumption that grades are commensurable across the two systems. There is not sufficient evidence to conclude that the effect of grades differs between scientific and nonscientific subjects ($p = .12$ for the null hypothesis that there is no interaction). As figure 1 shows, few scientific faculties admitted students with lower grades, thus there is sparse information to estimate the effect of low grades in these faculties.

Figure 1. Predicted Arrest Rate (Model 2)
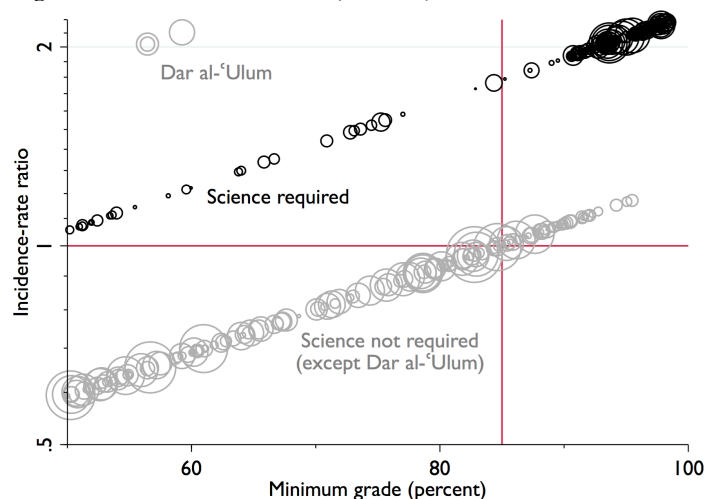
Models 1 and 2 incorporate only three variables to capture differences among institutions. Unfortunately there are no data on other relevant characteristics for mobilization, such as the concentration of students living in dormitories (Zhao 1998). As an alternative, model 3 includes a separate intercept for each institution, which absorbs the particular characteristics of each one (and thus shrinks dispersion, as shown by the reduced coefficient α). Analysis is thereby confined to variation among the arrest rates across faculties *within* each institution. Model 3 shows that grades have an even stronger effect in explaining variation within an institution. Moving from a faculty admitting students with 60 percent to one admitting students with 90 percent doubles the predicted arrest rate.[26]

In summary, our analysis identifies three important factors that explain variation in arrests. First, students in faculties that required the science examination were more likely to be arrested, even taking into account admission standards. There is no evidence, however, that engineering or medical sciences were distinctive. Second, as the literature on student protest would suggest, students in the most selective faculties—measured by minimum grades—were more likely to be arrested. Third, students who chose a religious education—by attending al-Azhar University or by studying in the Dar al-ʿUlum—were more likely to be arrested. This is remarkable only because the literature on Islamism has emphasized secular education.

Our analysis can be replicated for killings and for exclusions and suspensions, though the numbers are considerably smaller (Appendix table A2). There is insufficient information to ascertain whether fatalities vary with admission grades, or in scientific subjects.[27] Religion, however, is even more important for killing than for arrests. In the equivalent to model 2, students studying in the Dar al-ʿUlum are killed at six times the rate of other students; students at al-Azhar University are killed at five times the rate of those in public universities. Fatalities become less likely with increasing distance from Cairo.

For the incidence of students being excluded or suspended from university, we distinguish female students and male students in each faculty within each institution, thus doubling the number of observations. (A few faculties contained only one sex or the other.) The pattern is similar to killings. It is uncertain whether grades and whether scientific subjects have any effect. The effect of religion, however, is pronounced. In the equivalent to model 2, students at al-Azhar University are thirty times more likely to be excluded than those in public universities.

CONCLUSION

Before discussing the implications of these findings, we should acknowledge their limitations. Our analysis assumes that the distribution of arrested students across university faculties approximates the distribution of student activists in the Muslim Brothers and related Islamist organizations. Aside from the underrepresentation of women, there is no reason to suspect that arrests provide a biased sample of Islamists in universities. Our analysis is ecological, of course, and so cannot illuminate the dynamics of Islamist contention (McAdam, Tarrow, and Tilly 2001; Tilly and Tarrow 2015). We also cannot distinguish the effects of the university's educational context from the effects of the individual's family background. It is almost certain that students from better-off families tended to take the scientific rather than the literature examination, and to achieve higher grades. Despite these limitations, our analysis has the great advantage of comparing Islamist student activists to the underlying population of university students from which they were drawn.

Our findings are novel in several respects. Successive studies have identified university students as a key constituency for Islamist movements, and argued that there is a strong over-representation of students of engineering and medicine in Islamists' ranks. However, previous analyses (with the exception of Gambetta and Hertog 2009) have not considered the crucial denominator—the number of students studying these subjects at university.

Our results demonstrate that Islamist students in Egypt come from the academic elite: those who gain higher grades, and who have studied science rather than literature at secondary school. When we control for grades, Islamist students were no more likely to be drawn from engineering and medicine than from other subjects that required science. As already noted, the science examination for entrance into university is more prestigious. We can relate these findings to the literature on student mobilization in the United States and elsewhere, which has found that activists tend to be drawn from self-confident academic elites enrolled at more selective institutions. Our results build on that literature by showing that Islamist activists are concentrated in more selective disciplines. Viewed in this mode, Islamist activism in post-coup Egypt conforms to the pattern seen in the mobilization of students in the West and elsewhere: academically accomplished students were more likely to engage in activism.

There is no evidence to support the hypothesis that nonviolent Islamists in Egypt possess a technocratic mindset. While we do find that the arrest rate increased in faculties that admitted students taking the science exam, these settings teach a number of nontechnical subjects, including the experimental sciences (physics, chemistry, and biology), the applied arts (graphic design), physiotherapy, and home economics. Conversely, our findings neither support nor disprove the relative deprivation hypothesis. We do note, however, that most of the arrested students (62 percent) were in their first two years at university.[28] This provides

some modest evidence against relative deprivation, which would surely predict that students in the final year of their degree, and so confronted with the prospect of having to find employment, would be more likely to become involved in activism.

The literature also claims that political Islam emerges from secular universities. In fact, our results show that the likelihood of Islamist students being arrested and killed increases dramatically in academic settings in which students receive a religious education. In particular, al-Azhar University has emerged as an important site of Islamist opposition to the new military-backed regime (Ketchley 2013: 16; Ketchley 2017: Ch. 6). In the six months following Mursi's ousting, there were more anti-coup protests at al-Azhar than at any other university in Egypt. This leads us to conclude that the high arrest rate among Azhari students simply reflects their prominence in the anti-coup movement, and is not the result of a biased sample due to government targeting of religiously educated students. We also note that the majority of student deaths occurred during protests away from university campuses and outside of term time. The majority of arrests also took place beyond campuses. This raises an important question for future research: namely, does our sample reflect a change in the social contexts of Islamist activism, or has the proportion of Islamists studying in venues such as al-Azhar been historically underestimated? We interviewed several Muslim Brother students while conducting research for this paper (Esraa and Hoda, December 6, 2014; Ehab, December 9, 2014; Hend, December 17, 2014). Informants reported that their parents, all of whom were Muslim Brothers, had enrolled their children in al-Azhar's network of primary and secondary schools to ensure that they received a religious education. This could suggest a generational change in how Egyptian Islamists perceive more traditional modes of Islamic scholasticism.

We hope finally that our analysis will encourage scholars of social movements and of political Islam to exploit opportunities to locate individual activists in their social context. In this, our analysis advances understandings of the educational contexts of Islamist activism and underscores the importance of ecological data for testing assumptions about the social conditions that produce political Islam.

NOTES

[1] By Islamist activism we mean, "the activities of organizations and movements that mobilize and agitate activities in the political sphere while deploying signs and symbols from Islamic traditions" (Ismail 2006: 2).

[2] One phrase in the quotation is excised—"well-integrated personalities"—because it has not aged well.

[3] The first notable research on the social contexts of Islamist activism was published in the 1980s. This coincided with a shift away from explaining the rise of mass movements mobilizing in the name of Islam using textual readings of religious doctrine (see variously, Eickelman and Piscatori 1996; Ismail 2006; Moaddel 2002; Schulze 2000). For an important exception see Richard Mitchell's classic study of the Egyptian Muslim Brothers. In that early account of the post-Second World War Brothers, Mitchell observed that: "Precise information of the socio-economic distribution of the movement is just as difficult to amass as on its geographical distribution. But some hard, albeit random, statistical evidence from the numerous legal entanglements of the Society is available to suggest a membership drawn from most sectors of society" (1993 [1969]: 328).

[4] For the classic thesis on the relationship between relative deprivation and mass mobilization, see Gurr (1970). One application to elites is Jack Goldstone (1991).

[5] See especially Muhammed Hafez (2003: 9-19) who offers a thoughtful critique of the relative deprivation thesis as it applies to explaining Islamist violence in the Middle East. As he argues, relative deprivation would predict sustained Islamist rebellions in Jordan, Tunisia and Morocco, countries that have hitherto been spared the phenomenon.

[6] Ibrahim's follow-up study finds the opposite trend: "The average age of Islamic militants arrested and charged with acts of violence has dropped from 27 years in the 1970s to 21 in the 1990s. Of the 30 militants arrested, tried, and convicted for attacks on tourists, three were below the age of 20 (19, 18, and 16). Likewise, there has been a sharp decline in the formal education of Islamic activists, based on this sampling—in the 1970s, as many as 80 percent were college students or graduates. In the 1990s, that percentage had dropped to 20 percent. Among these, those majoring in elite subjects, such as medicine and engineering, dropped from 51 to 11 percent" (1994: 39). Of note, these proportions conceal very small numbers of activists, especially if the 30 militants include non-students.

[7] Similarly, engineers in Turkey were prominent supporters of the leftist movement in the 1970s, before it was eclipsed by the Islamist movement (Göle 1997: 55).

[8] For that early history, see Adeeb (1998); Lia (1998); Minault (1982); Shiraish (1990).

[9] For an overview of the social movements literature on repression, see Earl (2011).

[10] WikiThawra (2014a, 2014b) is an online database maintained by the Egyptian Center for Economic and Social rights. It contains records for 36,827 Egyptians of university age (17-28) detained between 3 July 2013 and 5 May 2014. Detailed biographical information, including the name of the arrestee, is available for 17,626 such individuals (forty-eight percent of recorded arrests). We were able to match 1,360 arrested Islamist students (79 percent of our sample) to the WikiThawra database. We also matched 151 Islamist students (77 percent of our sample) to WikiThawra's list of protestors killed between 3 July 2013 and 31 January. The deficit is explained by a combination of inconsistent spelling of names and the fact that WikiThawra is an incomplete record of arrests and deaths, being derived from publicly available reports of repression.

[11] Founded in 1928, the Muslim Brothers are one of the oldest and most influential Islamist movements in the world. For that history, see Lia (1998), Mitchell (1993 [1969]), and Wickham (2013).

[12] On the relationship between repression and radicalization, see Alimi, Demetriou, and Bosi (2015).

[13] On the process of becoming a Muslim Brother, see Kandil (2014).

[14] Place is known for 1,070 arrests and 155 killings; percentages omit missing cases.

[15] For that history, see Zaghal (1999).

[16] There are branches of the Dar al-ʿUlum at the universities of Cairo, Fayum, and Minya.

[17] In the Egyptian higher education system, the majority of undergraduate degrees run for four years. However, students of dentistry, engineering, pharmacology, and veterinary medicine complete a five-year degree, while medical students stay on for a sixth year before completing an elective in a public hospital.

[18] Only twenty-seven female students who were arrested can be matched to a faculty. Pooling women with men would presume that there were no gender differences, but treating women separately could not detect any differences due to the small number.

[19] Al-Azhar does not require higher grades than public universities for the same subject; the difference is only one percentage point, from regression with separate intercepts for each faculty.

[20] Institutions explain just seven percent of the variance in grades, while subjects explain 75 percent.

[21] Within al-Azhar, specifically religious subjects do not have a higher arrest rate than others.

[22] An alternative would be the total number of students in the institution (logged), but this is not statistically significant at the .05 level.

[23] The "great circle" distance, as the crow flies, is calculated using the Stata program *geodist*, written by Robert Picard. Alternative transformations to the square root provide no improvement.

[24] Including a quadratic term provides no significant improvement.

[25] The median is 89 percent, or 82 percent weighted by the number of male students.

[26] This range is not unrealistic: a few institutions included faculties that spanned the range from 50 percent to 98 percent or 99 percent.

[27] The 95 percent confidence interval for the effect of grades on the rate of killing (in Model 4, equivalent to Model 2) ranges from 0.05 to 4.4.

[28] This is calculated from 1,102 students whose year of study is known.

APPENDIX

Table A1. Correlation Matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)	Males arrested									
(2)	Number of male students	.27								
(3)	Faculty's minimum grade (0-1)	.05	-.18							
(4)	Faculty requires science examination	-.02	-.35	.53						
(5)	Faculty is engineering	.15	.05	.21	.25					
(6)	Faculty is medical science	.01	-.12	.41	.39	-.11				
(7)	Faculty is Dar al-ʿUlum	.02	.07	-.14	-.10	-.02	-.04			
(8)	Institution is al-Azhar	.32	.06	-.06	-.16	-.01	.00	-.03		
(9)	Institution's number of faculties, logged	.09	.11	.25	.19	.06	.13	.06	-.46	
(10)	Institution's distance from Cairo, sq root	-.19	-.25	-.14	-.01	-.01	-.03	-.04	-.13	-.24

Table A2. Predicting the Number of Male Students Killed and the Number of Students Excluded or Suspended

	Male students killed				Students excluded/suspended		
	irr	*se*	*p*		*irr*	*se*	*p*
Male					2.89	1.88	.10
Faculty's minimum grade (0-1)	.45	.52	.49		24.91	50.95	.12
Faculty requires science examination	2.05	.80	.07		.50	.41	.39
Faculty is engineering	1.18	.41	.64		2.06	1.41	.29
Faculty is medical science	1.06	.43	.88		2.26	2.37	.44
Faculty is Dar al-ʿUlum	6.48	2.41	.00 ***		9.18	9.54	.03 *
Institution is al-Azhar	5.05	1.01	.00 ***		30.05	32.06	.00 **
Institution's number of faculties, logged	1.80	.49	.03 *		.82	.34	.62
Institution's distance from Cairo, sq root	.47	.12	.00 **		.61	.49	.53
Intercept for each institution		*no*				*no*	
alpha (coefficient)	.38	.19	.00 ***		10.30	9.12	.00 ***
N		348				685	
Number of victims		163				446	
Number of students		582,549				1,259,402	

Notes: Negative binomial regression. Model 4: number of male students as exposure; each observation comprises one faculty in one institution. Model 5: number of students as exposure; each observation comprises students of one sex in one faculty in one institution. irr: incidence-rate ratio; se: standard error, adjusted for clustering by institution; p: p-value (two-tailed), *** $p < .001$, ** $p < .01$, * $p < .05$

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