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ABSTRACT

This report examines the belief that education administration (EA) has attracted students of below-average verbal, quantitative, and analytic scores, as measured by standardized tests. The paper makes two assertions: principals as school leaders need academic credibility to relate with teachers as "critical friends," and successful principals store and draw upon their experiences as expert decision makers. For the study, the Graduate Record Examinations (GREs) of individuals intending to enter EA programs from 1982 to 1996 were reviewed. Trend analysis indicated that the number of U.S. citizens taking the GRE who planned to pursue graduate work in EA rose 35 percent over the 15-year period of the study. However, as a percentage of all test takers, candidates in EA actually declined from 2.3 percent to 1.8 percent. Two key findings emerged: examinees planning graduate work in education had lower verbal, quantitative, and analytic scores when compared to examinees in six other fields, and within the field of education, examinees intending to study administration had lower GREs than all other majors. The results suggest that many undergraduate education majors did not receive adequate training in analytic skills prior to their acceptance into college. Recommendations for raising the quality of future EA leaders are suggested. (Contains 54 references.) (RJM)

Trends in GRE Scores in Education Administration: Implications for Principal Preparation Programs

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Abstract

Education administration has attracted students of below-average verbal, quantitative, and analytic scores, as measured by standardized tests. This is a major problem for administration programs for two reasons. Principals with high overall academic ability are more likely to be viewed as leaders in re-intellectualizing instruction with teachers so that we achieve academic success with nearly all of our students. Second, principals should be highly analytic about their work in storing and retrieving information in ways that result in high quality decision making and problem solving. In this study researchers examined the Graduate Record Examination of Examinees intending to enter EA graduate programs from 1982 to 1996. Two key findings were: (a) Examinees planning graduate work in the field of education have lower verbal, quantitative, and analytic scores than those of examinees in the other six fields (e.g., arts and humanities, physical sciences); (b) Within the field of education, examinees intending to study administration have lower GREs than all other majors (e.g., elementary education); this difference while statistically insignificant has been consistent. Suggestions for improving the problem and recommendations for future research are provided.

Trends in GRE Scores in Education Administration: Implications for Principal Preparation Programs

Researchers (e.g., Cubberly, 1922; Edmonds, 1979; Goodlad, 1955; Heck, 1992) have long claimed that good principals are a major key to school reform. Now, policymakers are well aware of the saliency of the principalship in school improvement. In a landmark assessment of public education released in May 1983, the National Commission on Excellence in Education recommended that "Principals and superintendents must play a crucial leadership role in developing school and community support" (p. 38). Policymakers then turned the spotlight on principal preparation. They once again heard the derision with which practitioners viewed university preparation programs. (See Pitner [1987] for studies on practitioner denigration of administrator preparation.) In 1988 Daniel Griffiths then issued a warning to professors of education administration (EA): "We had better reform and be pretty damn quick about it."

This presient message continues to haunt the EA professoriate, since the current reform cycle has been unremitting in its fervor. Vouchers (e.g., City of Milwaukee public schools), tax tuition credits, and other market-driven mechanisms continue to lurk. Education management firms threaten to replace state-certified administrators, especially in urban districts whose inner city schools are viewed as low-performing by local and state policymakers. (See Furtwengler [1997] for seven education management organizations in the hunt for contracts with school boards).

Can we reform principal preparation programs while there is time? We need to face up to some major issues in improving the

quality of our programs. (See Leaders for America's Schools for many of these issues.) In this paper we address the problem of the overall low intellectual quality of principal candidates. We examined the Graduate Records Examination (GRE) from 1982 to 1996 of examinees intending to enter EA graduate programs. These 15 years constitute a critical time frame, since the year 1983 marked the beginning of the current reform cycle, and since Griffiths, Stout, & Forsyth (1987) reported that during the years 1981-1984 EA majors ranked fourth from the bottom of 94 intended majors.[1] If the GRE has remained low through 1996, then we continue to have a major problem with candidate quality. Policymakers' patience with the excruciatingly slowly rising student outcomes will not last forever and heavy-handed legislation could occur.[2] On the other hand, if GRE scores indicate substantial improvement, we can be cautiously optimistic about the viability of university-based EA programs. We first make our case for the importance of GRE scores as a proxy both for overall academic prowess and for analytic abilities of principals.

Study Rationale

We make two assertions. Principals as school leaders need academic credibility to relate with teachers as "critical friends" in examining traditional assumptions about teaching and learning. Second, successful principals store and draw upon their experiences as expert decision makers. In managing fast-paced and unpredictable environments principals therefore need to be highly analytic about their work.

Highly Academic Principals Can Interact as Colleagues with Teachers on Re-Intellectualizing Instruction.

Ever since the publication of the Coleman Report in 1966, policymakers in the United States have questioned the capacity of public schools (their "value-added") to succeed with all students. This issue lay dormant in the policy environment until the early 1980s. Seeley (1981) and other reformers then presaged what was to become conventional wisdom in the 1990s when they reframed schooling as what the student could do as opposed to mere compliance with state education agency requirements for teachers. (Also see Finn [1990] for the "paradigm shift" from school inputs to outputs.)

Reformers now expect schools to succeed with nearly all students. In the mid 1980s school policy took an abrupt turn when decision making began to devolve to the school level. In exchange for this autonomy principals and teachers were to be held accountable for student outcomes (Alexander, 1986). This policy exchange places immense pressure on schools to re-think how curriculum is taught and instruction delivered (Keedy, 1994). We now are expecting school personnel to make their own decisions about vastly improving their instructional capacity on a school-by-school basis. (See Spillane & Thompson, 1997.[3])

What can principals as school leaders do about improving school capacity? One way is for principals and teachers to change how they relate on an informal basis (see Keedy & Finch, 1994). An example of this new collegial relationship can be found in the Coalition of Essential Schools literature.[4] Researchers, such as Cushman (1992), Muncey and McQuillan (1993), and Prestine (1991)

found that principals and teachers in the Essential Schools related in ways different from the hierarchical, depersonal ways that have long typified public schools. Since teachers have always operated in a highly politicized environment,[5] most teachers, according to Cushman, will not make the first moves toward learner-centered instruction until they see principals modeling comparable changes with themselves. Essential School principals define how they envision revitalizing classrooms and form these visions around exploiting opportunities offered by their school contexts (see Keedy, 1992). They persist in asking teachers to analyze and reflect on how and why they teach in certain ways: What assumptions about teaching and learning drive traditional frontal teaching as opposed to the assumptions empowering students as independent learners? (For several of these assumptions, see Keedy & Achilles [1997].)

Essential School principals also help teachers use statistical analyses in charting student classroom progress and in helping students use quantitative reasoning in academic areas. Teachers learn how to conduct action research projects on (a) strategies for student questioning, (b) researching new curriculum, (c) reporting to each other on visits to other schools, and (d) working as peer mentors with new teachers. Essential School principals and other principals are realizing that they are dependent on teacher instructional leadership, since it is the teachers who ultimately must change classroom relationships with their students. If we want teacher-student classroom interactions to be thoughtful and engaging places for students[6], we first have to establish these patterns of

interactions between principals and teachers (Keedy, MacPhail-Wilcox, Mullin, & Campbell Wooten, 1998).

A crucial question becomes: Can or would principals with low GRE scores relate collegially in "re-intellectualizing teaching" if they themselves are not viewed as academic leaders by teachers? Principals with low academic abilities may have little professional credibility in interacting as critical friends as many Essential School principals do with teachers. If we want the United States to be Number One in the world in mathematics and science (a national goal established at the Charlottesville summit), do we want principals with low scores that measure aptitude for graduate school work running our schools?

Expert Problem Solving and Decision Making Require Analytic Skills.

Advances in cognitive science provide the basis for our second assertion. Researchers found that domain experts perceived large, integrated patterns in problem situations quickly and represented these situations in terms of solution structures rather than as surface features (Glaser, 1991). Experts represent problems by categories and direct their problem solving by eliciting knowledge structures, or schema, which include potential solution paths (Chase & Simon, 1973; Chi, Feltovich, & Glaser, 1981). Expert problem solvers also use more abstract categories with reference to principles and have better and faster pattern recognition skills (Bereiter & Scardamalia, 1986).

Other researchers have applied the findings of cognitive science to the practice of education administration. Leithwood and Stager (1989, pp. 141-146) compared expert with non-expert

principals in their problem-solving abilities. Particularly in dealing with unstructured problems, they found that:

(1) Expert principals recognized various problems from past experience and therefore solutions were familiar;

(2) Expert problem solvers were explicit about their assumptions regarding the hypothetical nature of problems presented to them;

(3) In their thinking about goal-setting, experts could frame off implications for problems not directly concerned with students and programs more than non-experts;

(4) Experts applied more principles (long-term goals grounded in fundamental laws, doctrines, assumptions) than non-experts. Regarding his entry as a principal, one expert suggested: "If the kids are turned off, they will start to look for things to criticize." Using this abstraction in providing an over-arching structure for problem solving, he then decided what issues and events should get his attention.

(5) Experts spent more time framing the problem, collecting information, and planning for the solution.

In reviewing the past 20 years of principal effectiveness studies, Hallinger and Heck (1995) confirmed Leithwood and Stager's emphasis on setting and attaining goals. Goal setting accounted for more of the variance than any other principal effectiveness variable.

Other researchers have contributed similar findings on principal cognitive development. Silver (1975) found that principal abilities to differentiate and integrate environmental stimuli into complex conceptualization schema were related significantly to use of interpersonal skills with staff. Expert

principals also demonstrated flexible social cognition: adjusting interpretations, taking control of thoughts and plans, seeing multiple alternatives, and using new experience to rework accepted beliefs and values (Cooper & Heck, 1995). Successful principals framed problems into fewer larger problems and focused on results (Marsh, 1997).

Administrators in general are confronted with problems and making decisions (Simon, 1957). School administrators in particular work in a fast-paced, fragmented, and unpredictable environment (Peterson, 1977-78). An administrator's cognitive ability therefore is operationalized through storing and retrieving previously-stored information and making decisions based on these explanatory frameworks. In two studies on the Cognitive Approaches to School Leadership (CASL) project, expert principals identified more problem attack strategies than non-experts (Allison, Demaerschalk, & Allison, 1996). Expert principals also attended to more central elements of a case (e.g., purpose and policies of the school library) than non-expert principals (Morfitt, Demaerschalk, & Allison, 1996). These studies confirm Kennedy's (1987, p. 148) conclusion that administrative experience only contributes to expertise if practitioners are capable of learning from it.

In sum, successful principals should be highly analytic about their work. Principals need to learn from experience, to organize information into explanatory frameworks, and to draw upon these frameworks in problem solving; these skills approximate inductive reasoning (linking similar particulars into categories and patterns). Drawing upon categories to deal with problems and connecting them to school goals operationalize deductive

reasoning.

The cognitive requirements of domain experts, problem-solvers, and expert principals seem to relate to the cognitive skills measured by the GRE[7]:

> The verbal measure tests the ability to analyze and evaluate written material and synthesize information obtained from it, analyze relationships among component parts of sentences, and recognize relationships between words and concepts. The quantitative measure tests mathematical skills and understanding of elementary mathematical concepts, as well as the ability to reason quantitatively and to solve problems in a quantitative setting. The analytical measure tests the ability to understand structured sets of relationships, deduce new information from sets of relationships, analyze and evaluate arguments, identify central issues and hypotheses, draw sound inferences, and identify causal explanations. (The Graduate Record Examination Board, 1996, p. 7)

There is some empirical evidence that the GRE does measure analytic abilities. In a computer-delivered problem-solving task, examinees who could sort math problems against prototypes as possible solutions had higher GRE general test scores than examinees who sorted less proficiently (Bennett & Sebrechts, 1997).

We now make a policy implication before moving on to the study methodology.

In This Turbulent Policy Era We Need Outstanding Principals More Than Ever Before.

> [T]he evolution of practice of educational administration during the period 1959-1981 has been the evolution of roles. Sweeping alterations in American society, in student enrollments, in personnel, in regulation, in finance, and in technology have changed school executives from the leaders of an unquestioned institution to conflict managers and advocates in an intensely competitive environment. (Hess, 1983, p. 245)

If there was ever a time for innovative, aggressive leadership in our schools, the time is now. Our principals need to be academic leaders capable of re-intellectualizing instruction with teacher-leaders so that far more of our students experience academic success. This collaboration requires our principals to be respected by their teachers as academic leaders. Principals with high GRE scores are more likely to be viewed as academic peers by the very teachers with whom they must forge the norms of colleagueship and pedagogical experimentation.

Our principals also must be highly analytic about their work. In the fast-paced, fragmented world of school administration our principals need to store and retrieve their experiences in ways that result in high quality decision making and problem solvers. We therefore concur with the 1987 Griffiths et al. assessment of the low GRE scores of principal candidates: "Lest some think too much emphasis is placed on the intellectual criterion for educational administrators, they should be reminded that there are

no recorded examples of good dumb principals or successful stupid administrators" (p. 290).

Have GRE scores improved since the Griffiths et al. assessment of the 1981-84 scores? As of 1996 are we attracting a higher quality of principal candidates at a time when innovative and thinking-out-of-the box" leadership is imperative? This is a particularly crucial question because of the projected massive retirement of many school administrators during the next decade.

Analysis of the GRE Database

Research Questions and Methodology

The Graduate Record Examinations (GRE) are designed to measure three aspects of academic ability: verbal (V), quantitative (Q), and analytical (A) skills. Validity studies indicate that scores on the GRE provide a reasonable prediction of first-year grades in graduate school. Studies conducted on 960 students in 58 education departments found multiple correlations between the three scores and first-year grades to average .33 (Schneider & Briel, 1990). Range-restriction effects resulting from self-selection, departmental use of scores for selection, and the restricted range of first-year grade averages limit the correlations among these variables. Validity coefficients would probably be much higher than .33 in the absence of range restriction.

Our study had several limitations. First, it was limited to all US citizens who took the GRE and specified that they planned to study education administration (EA). Second, some principal candidates do not take the GRE, so they were not included in this analysis. Third, not all GRE examinees complete the course of

study. (Also, some EA candidates for various reasons do not become school principals.) Last, the data studied here can be generalized only to GRE test takers who intended to enroll in graduate school and study EA. These examinees, however, constitute a national sample of prospective school principals and are probably the largest and most representative sample available.

In 1996 the GRE was taken by nearly 300,000 U.S. citizens. Almost 40,000 planned graduate work in education, and about 5,000 planned to specialize in EA. Examinees also provided additional information about themselves, including undergraduate major, gender, age, and parents' education.

In our analyses we asked these questions:

(1) Has there been a change in the number of examinees planning to enter EA over the 15-year period, and has their gender composition changed?

(2) How do the GRE scores of examinees in EA compare with the scores of all examinees in education and in other fields of study?

(3) Are there gender differences in the GRE scores of examinees in EA, and how do their scores compare with scores of same-sex examinees in other fields?

(4) Has the age distribution changed over the 15-year period, and are test scores related to age?

(5) What are the most common undergraduate majors of examinees in EA, and how do their test scores differ?

(6) How do the scores of examinees switching from education to a different field for graduate school compare with the scores of examinees planning to continue in education?

(7) How might we account for the patterns in test scores and major field selections observed in the GRE database?

Results

(1) The number of US citizens taking the GRE and planning graduate study in EA rose 35% over the 15-year period, from just under 4,000 in 1982 to just over 5,000 in 1996 (see Figure 1). However, the growth rate of all examinees during that period was 68%, so part of the increase in EA can be attributed to the greater number of people taking the GRE and planning to attend graduate school. As a percentage of all test takers, candidates in EA actually declined from 2.3% to 1.8%. The percentage of EA examinees who were female increased from 50% in 1982 to 60% in 1996. Since 1988 there has been a gradual decrease in the number of males, and the number of females has continued to increase.

Insert Figure 1 about here

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(2) In 1996 the mean GRE verbal score of all US citizens taking the GRE was 485. The standard deviation was 96. Examinees planning graduate work in all areas of education averaged 448, and the average score in EA was 437, which was half a standard deviation below the average for all test takers. (See Figure 2.)

Insert Figure 2 about here

The small difference in verbal score average between examinees in EA compared with those in all areas of education grew slowly after 1986. Since 1989 there has been a decline in verbal score averages, and scores in EA have paralleled that decline. Patterns in quantitative and analytical scores have been similar.

Average scores of examinees in EA are lower than the averages of examinees in all other broad fields of graduate study. Table 1 compares EA with 8 other areas. Also shown are the differences (Dif-V, Dif-Q, and Dif-A) between the average scores of examinees in EA and examinees in each of the other areas. It is evident from the table that the average verbal score of examinees in EA is more than a full standard deviation lower than the average score of examinees in arts and humanities. Average scores in business and in health sciences and services are 20 points (one-fifth of a standard deviation) higher than in EA.

Insert Table 1 about here

Examinees in engineering and physical sciences, not surprisingly, have higher quantitative skills than examinees in EA. The differences, however, are quite large: nearly 2 standard deviations (210 points) for engineering students, 1 and a half standard deviations (186 points) for examinees in physical sciences, and nearly a full standard deviation (112 points) for examinees in biological sciences. Even test takers in arts and

half a standard deviation (59 points) higher in quantitative skills than do examinees in EA.

The average analytical reasoning score of examinees in EA was 23 points, or about one-fifth of a standard deviation, lower than the average score for examinees in all majors of education, and the differences are much larger for examinees in all other fields. This pattern also held true for the quantitative. Only in the verbal test was any education major (physical education: 404 and special education: 430) lower than that in administration.

(3) In 1996 the verbal and analytical score averages of male and female examinees in EA, as shown in Figure 3, were about the same, and the quantitative score average was 42 points higher for males. In the total GRE population there are greater gender differences--scores are higher for males than females on all three tests.

Insert Figure 3 about here

Trends in verbal scores for males and females in EA have paralleled the trends for all examinees. Quantitative scores have risen very slightly for both male and female examinees in EA and for all female examinees. Trends are not shown for analytical scores because the test was changed during that fifteen-year period and scores from year to year are not entirely comparable.

(4) The age distribution of test takers planning to enter EA changed over the 15-year period, and it changed differently for males and females. Figure 4 shows the distributions for 1982 and

1996. In the youngest age cohort (20-24), there were always more females than males, but in their early thirties, males outnumbered females. Beginning around 1988, a bimodal distribution began to emerge for females, so that by the 1990s there were two distinct peaks for females, the first and largest in the late twenties and the second in the early forties. By 1996 there were more females than males in every age group.

Insert Figure 4 about here

In the population as a whole, verbal scores remained the same or rise slightly with age, and quantitative scores declined. We assume this is a practice effect dependent largely on the kind of employment the older person has had prior to taking the GRE. Most college graduates work in areas that stimulate verbal skills, and, unless they are scientists or engineers, they have fewer mathematically challenging activities in their lives.

The average verbal score of test takers in EA is the same for most age groups but is higher for those in their forties. Quantitative and analytical score averages decline rather sharply, especially after age 50, just as they do in the general population. (See Figure 5.) The decline in quantitative scores for females in EA is quite large--nearly 1Ω standard deviation.

Insert Figure 5 about here

On average, examinees in EA tended to be somewhat older than examinees in other fields, with the exception of those in health sciences and services. There are no age ranges, however, in which the average scores of test takers in EA are as high as the average scores for all examinees. Therefore, the age of EA majors does not explain their lower-than-average test scores.

(5) The most common undergraduate majors of examinees planning graduate study in EA were elementary education (25%), secondary education (12%), physical education (4%), EA (4%), and English language and literature (4%). Together, these undergraduate fields account for half of all GRE candidates to EA.

The highest average test scores are earned by examinees from English language and literature; the lowest are earned by examinees from physical education and EA. The lowest quantitative and analytical scores are earned by examinees with undergraduate majors in EA. (See Table 2.)

Insert Table 2 about here

Examinees who switched to education from other disciplines generally had lower test scores than their counterparts who continue in those disciplines, and they had higher scores than other education majors. In 1996, for example, examinees with undergraduate majors in English language and literature (EL&L) had an average verbal score of 550. Those who switched to EA had an average of 502, and those who planned to continue in EL&L had an average of 564.

(6) Examinees who leave education to pursue graduate work in another discipline generally have higher test scores than those who continue in education. In 1996, for example, examinees with undergraduate majors in elementary education had an average verbal score of 429. Those who continued in elementary education and EA had average scores a little lower: 419 and 417, respectively. Those who planned to switch to library science, which attracts students with higher test scores, had an average verbal score of 478.

(7) Researchers (e.g., Grandy, 1995) discovered patterns in the choices students make in their graduate fields of study. If students score much higher than the average for other students with the same undergraduate major, they tend to switch to a different field for graduate study--one in which students have higher scores. Similarly, if students score much lower than the average for other students in their undergraduate fields, they tend to switch to a field where students have lower scores. Students in education as undergraduates have, on average, relatively low scores. Many of the low-scoring students in the humanities and sciences switch to education for graduate school. Many of the high-scoring students in education switch to science

or humanities for graduate school, thus causing a brain drain away from education.

These patterns, however, do not explain why the average student in education has low test scores or why low-scoring examinees choose education. One factor that does account for test scores, at least in part, is parents' education. First-generation college students had, on average, lower test scores than do students who lived in a household with college-educated parents (see Figure 6).

Insert Figure 6 about here

There is a strong linear relationship between father's education and each of the test score averages, especially the analytical score. In 1996, 58% of examinees in engineering had fathers with bachelor's degrees, and their average analytical score was 611. Only 35% of the fathers of examinees in EA had bachelor's degrees, and their analytical score average was just 482. In fact, one-fifth of the examinees in EA had fathers who never completed high school.

Discussion and Recommendations

These findings might not make EA professors comfortable with the analytic potential of principal candidates who took the GREs. As pointed out by Seeley (1981), schools now are expected to succeed with far more students than merely the top 20 percent. Yet do our EA programs have principal candidates with the potential to reframe their thinking in action (Argyris & Schon, 1974; Silver,

1982) in ways that schools can become learning communities (Senge, 1991) and high-productivity organizations (Finn, 1990)?

What should we do about this problem? If one accepts our premise that analytic skills measured by the GRE are important to administration (and perhaps to teaching as well), we are not attracting high-caliber candidates. Our last finding implies that many undergraduate education majors have not received adequate training in analytic skills prior to their acceptance into college. Growing up in an educationally-disadvantaged community may be one of the most important driving forces behind a student's decision to pursue teaching or the principalship as a profession. Our data show, however, that the analytical skills probably acquired at home by students in the humanities, sciences, and engineering, are deficient in education students. These skills can be taught at the college level. The GRE analytical test measures the ability to "understand structured sets of relationships, deduce new information from sets of relationships, analyze and evaluate arguments, identify central issues and hypotheses, draw sound inferences, and identify causal explanations" (Graduate Record Examinations Board, 1996, p. 7). These skills can be incorporated into the undergraduate education curriculum.

There also is the issue of principal recruitment. Despite the recommendation by Griffiths et al. (1987, p. 292) that we accept only those candidates with GRE scores in the upper 50 percentile of all examinees, we are not even close to this standard. This problem of low standardized test scores, however, has been around for a long time. Teachers, who form the "pool" from which school administrators are selected, have exhibited a similar level of academic ability across several measures at least since the 1980s.

In 1982 high school seniors planning to teach ranked 26th in the Scholastic Aptitude Tests out of 29 rankings. Their SAT average of 813 (a combined score of verbal and mathematics) was below the national average of 839. Physical science majors had the highest average (1054) while trade and vocational students (739) were last (Achilles [1984] citing U.S. News and World Report, 14 March 1983, pp. 37-40).

Vance and Schlechty (1982; cited by Achilles, 1984) found that 16 percent of teachers of the lowest ranking on GRE scores intended to stay in teaching as compared with only 2 percent of those in the highest ranking. These findings are rather alarming since Ingersoll (1997) found that the projected teacher shortage was caused by low teacher retention and not by a lack of college graduates going into teaching. If many of our brightest teachers leave teaching, the quality of the pool from which the vast majority of principal candidates are drawn remains academically less-than-average.

So we may lack a quality pool from which we might recruit candidates with administrative potential for the principalship. We have four recruitment strategies which may help the EA professoriate reach Griffiths's et al. goal of accepting only the top fifty percent of principal candidates in the GRE. First, we need to reduce the "sieve" of candidate self-selection, whereby teachers decide they want to become principals and enter masters and certification programs. The University of Louisville and Jefferson County Public Schools (Kentucky) have partnered a program (Identifying and Developing Educational Administration Leaders for Schools) in which a major assessment criterion is a

recommendation by a candidate's principal. The principal also must agree to participate in mentoring activities with the recommended candidate, so it is in the principal's self-interest to recommend only a quality candidate. While not a "silver bullet," this procedure does have some effect on stopping up the sieve of candidate self-selection.

Second, policymakers need to make teaching a more attractive career. Without major career inducements, the pool from which most principals are selected will continue to be second-rate. A policy alternative is recruiting principal candidates with higher analytic skills from other fields, such as business and the military. Another recruitment strategy is luring liberal arts majors who tend to have higher GRE scores into teaching and administration. The Holmes Group now recommends that teachers first obtain an undergraduate degree in an academic field before entering a masters degree in teaching. Is there potential here for recruiting potential candidates from teachers in this five-year masters program? Teach for America also recruits liberal arts majors to the teaching career. Are there candidates available from this source?

Third, if one accepts our premise that analytic skills measured by the GRE are important to administration (and perhaps to teaching as well), EA programs should be housed in Carnegie I and II research universities which tend to attract students with higher GRE scores. Major state universities with high academic standards, however, may no longer have as many students intending to prepare for teaching (Sykes, cited by Achilles, 1984). Other institutions with open admissions policies may attract teachers of lower abilities who lack other options.

Is there a trend to eliminate EA programs from research universities? The University of Michigan, the state's flagship institution, recently eliminated their administration program. In one state's recent downsizing of EA programs, the university system's general administration eliminated a EA program at one of the state's two major research universities (see Keedy & Heuts, 1997). Does this phenomenon bode well for university-based EA programs? To exert some political pressure on higher education state systems, each state should have an active EA professors organization capable of monitoring potential program downsizing and influencing reform-minded legislators.

Last, there might be other measures of administrator analytic abilities and their potential for administrative quality other than the GRE. Paula Silver's work included measures of assessing principal capacity for information processing and conceptual abilities in 1975. If the GRE and the Miller Analogy Test are considered too academic to have measurement potential for administrative potential, then can we use more direct measures of analytic abilities?

Recommendations for Research

If we are not attracting quality candidates for preparation programs, then Haller, Brent, and McNamara's (1997) conclusion that university EA programs added little, if anything, to principal on-the-job performance may have questionable validity. How can we conclude that university programs have little added value if we do not have intellectually-capable students in the first place?

Can we test the Haller, Brent, and McNamara hypothesis by forming treatment and control groups? The treatment group might

consist of candidates with relatively high GRE scores or other measures of analytic ability; the control group could consist of candidates with average scores for EA examinees. In drawing random samples from these two groups with matched pairs of principals in schools similar in SES and size, does the treatment group of principals and schools produce higher student outcomes over a five-to-ten year period? Second, on a national basis, are major universities getting out of the education administration business? Are more programs being "regionalized" so that teachers and principal candidates have geographically more accessible programs? What implications might this policy trend have on the future viability of EA programs?

As EA professors, we need to do something and not just sit on our hands. We may be traveling on a dangerous road. That the GRE for examinees planning graduate work in EA has not improved since 1984 relative to that in other fields does not bode well in a reform era in which bold and innovative approaches to education and social problems are needed. Despite warnings from Griffiths in 1987 about our crisis, we are still not attracting candidates with higher analytic abilities, as least as measured by the GRE.

Endnotes

[1]The source is The Guide to the Use of the Graduate Record Examination Program (1985), Educational Testing Service, Princeton, NJ, pp. 22-26.

[2]Keedy and Heuts (1997) described how legislators in one state reduced the number of university principal preparation programs from eleven to seven and mandated procedures for establishing quality standards for program admission and administrator licensure.

[3]According to Spillane and Thompson (1997), teachers need to learn not only more subject matter and skills. They also must unlearn much of what they already know (e.g., assumptions about the classroom conditions for maximizing student learning). This "reconstructed learning" requires sustained, honest, substantive interaction about new ideas with people who understand these new ideas for effective instruction at least a little better than most teachers. (Also see David [1994, p. 4] for this concept of capacity building.)

[4]The Coalition of Essential Schools has particular relevancy to our argument because some of their urban and inner-city schools attain higher-than-expected student outcomes. New York City's Central Park East Secondary School typically sends 95 percent of its students to postsecondary education (see Meier, 1997).

[5]For a thorough analysis of the tenuous political survival of US teachers, especially in small towns and rural areas, read Zeigler (1967).

[6]As depicted by researcher/school reformers like John Goodlad (1984) and Ted Sizer (1984), classrooms in the United States have been boring places. The modal number of questions that students ask of their teachers per high school class, according to Sarason (1990), is two.

[7]Griffiths et al. (1987, p. 290) imply agreement with our assumption about the broad connection between the GRE and principal on-the-job performance: "The Graduate Record Examination is the single best indicator of the mental ability of graduate students."

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Figure 1. Number of GRE Test Takers Planning Graduate Study in Education Administration

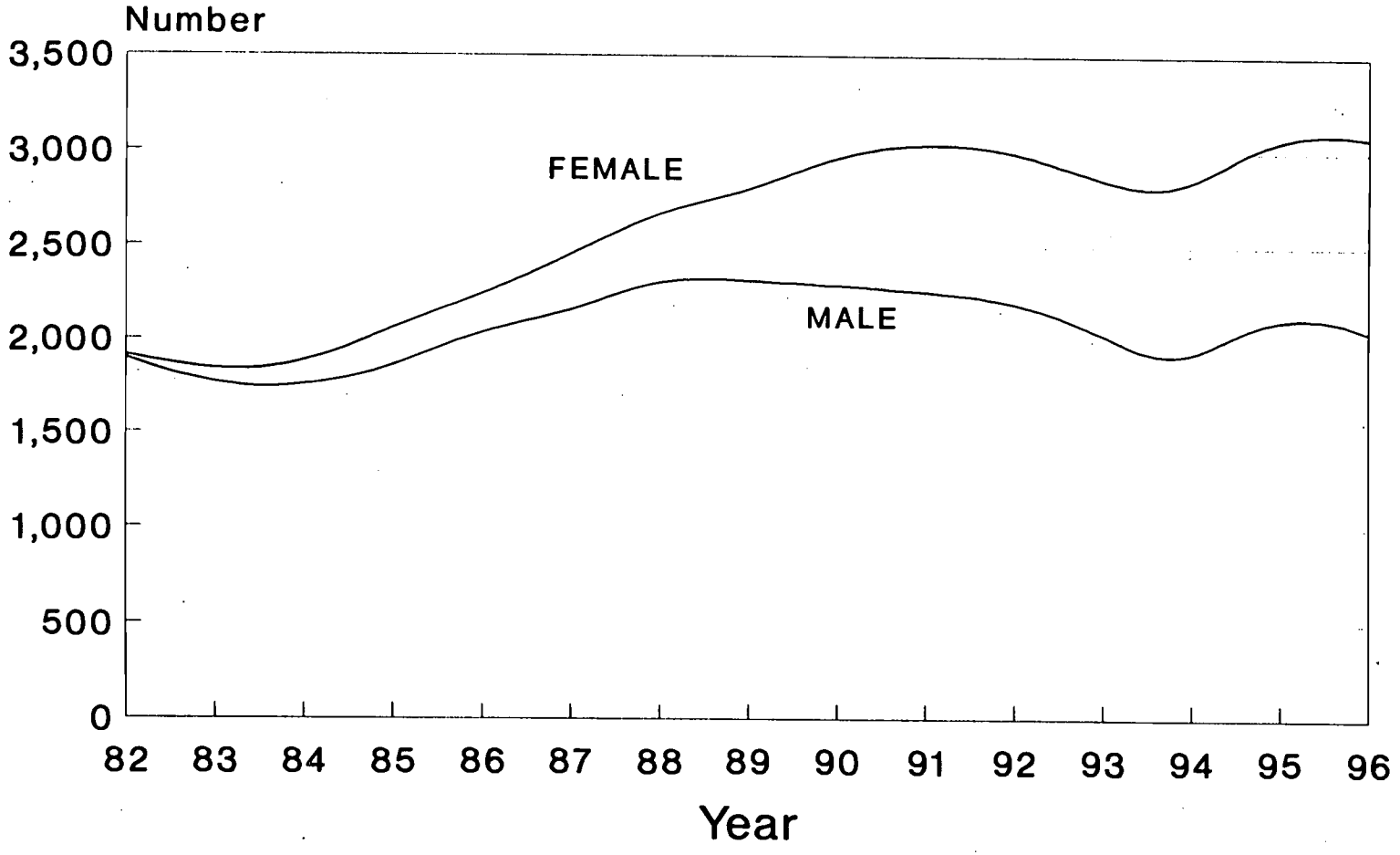

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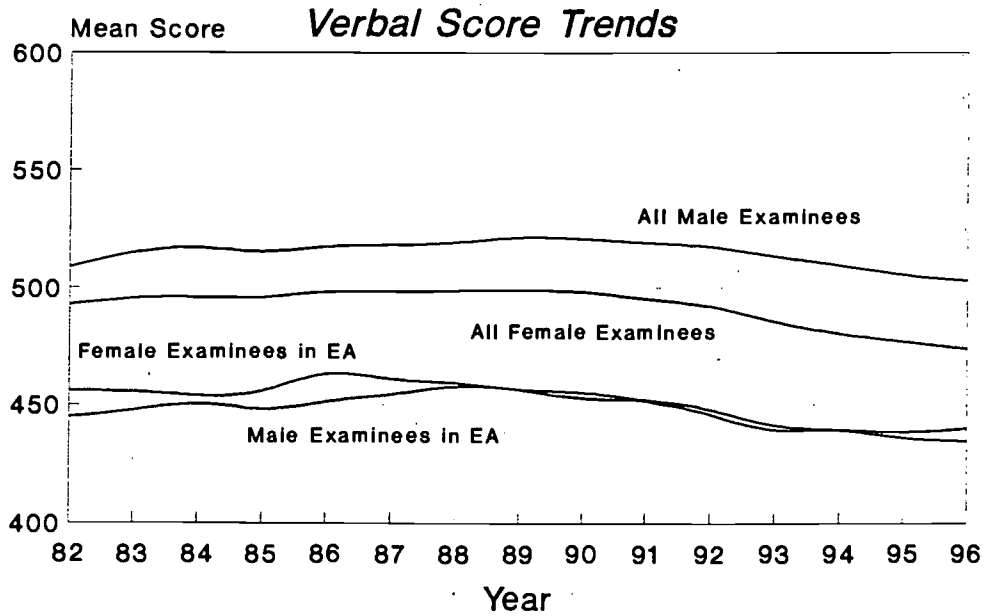
Figure 3. Trends in GRE Scores of Test Takers in Education Administration Compared with All Test Takers, by Gender



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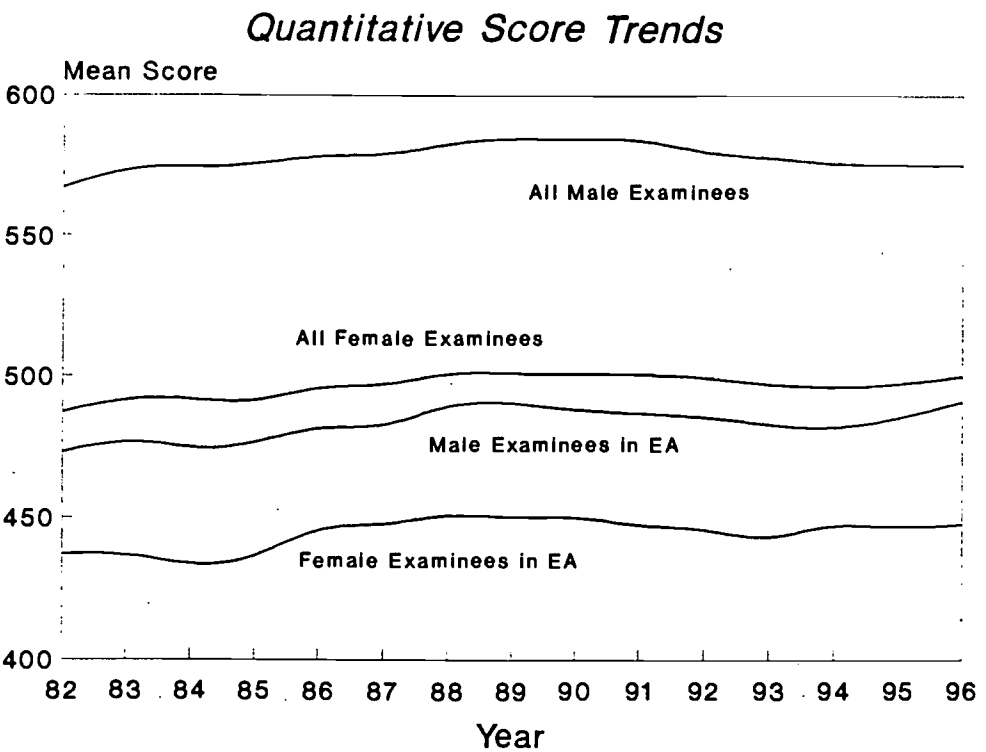

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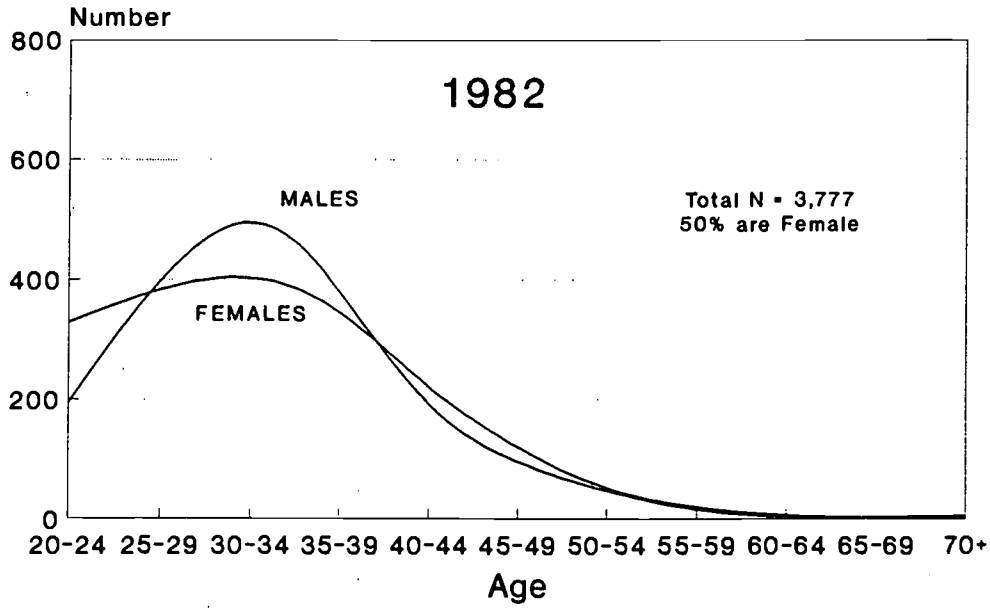
Figure 4. Age Distributions of GRE Test Takers in Education Administration (1982 versus 1996)



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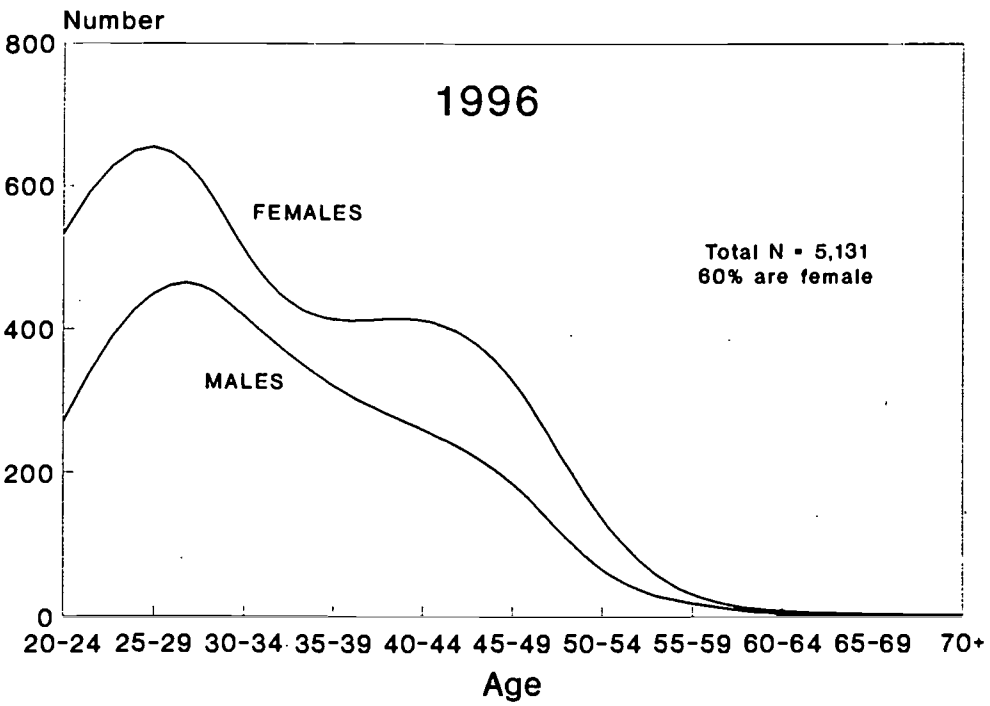

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Figure 5. GRE Score Averages of Examinees in Education Administration by Age Group

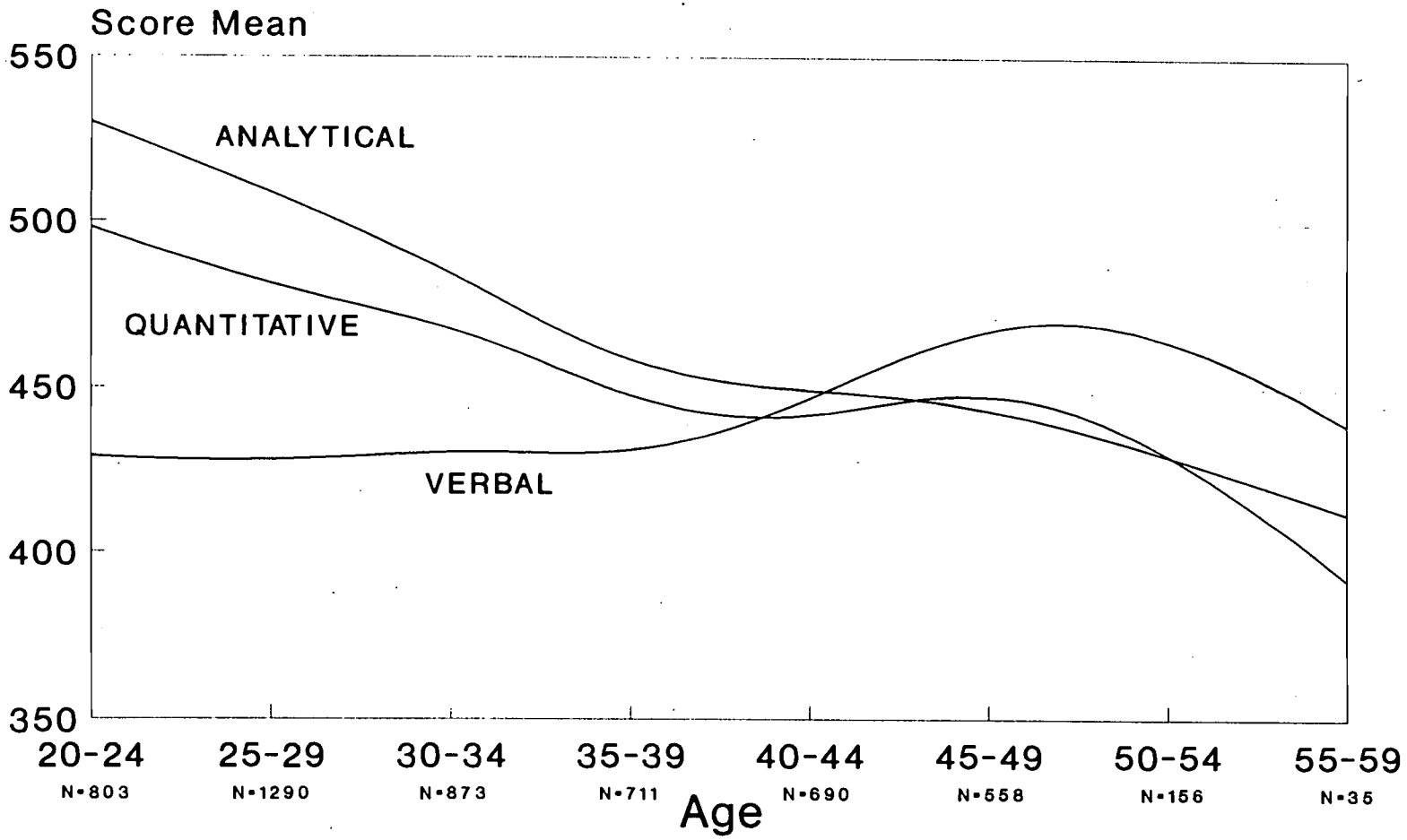

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Figure 6. Relationship of GRE Analytical Score to Father's Education for Each Intended Graduate Major

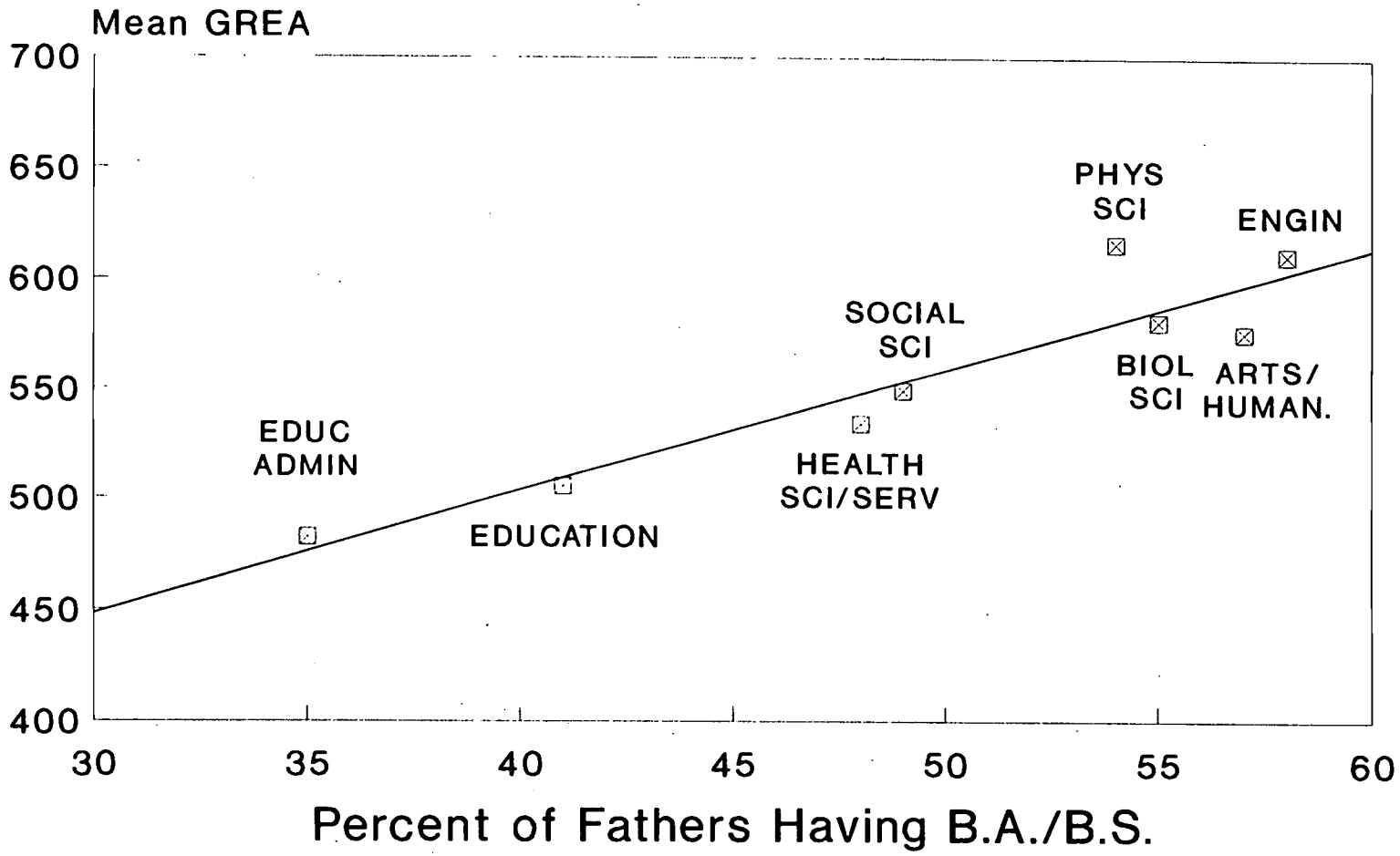

Table 1. Average GRE Scores of Examinees Planning Graduate Study in Education Administration Compared with Average Scores of Examinees in Eight Broad Fields of Study

Intended Graduate Field	Mean GRE Score and Score Difference (Average EA Minus Average for Row)					
	Verbal (SD=96)	Dif-V	Quantitative (SD=122)	Dif-Q	Analytical (SD=125)	Dif-A
Education Administration	437	0	465	0	482	0
All Education	448	-11	476	-11	505	-23
Business	457	-20	516	-51	525	-43
Health Sciences & Services	457	-20	510	-45	534	-52
Social Sciences	489	-52	513	-48	549	-67
Biological Sciences	498	-61	577	-112	581	-99
Engineering	503	-66	675	-210	611	-129
Physical Sciences, Math, & Computer Sciences	520	-83	651	-186	616	-134
Arts & Humanities	551	-114	524	-59	576	-94
TOTAL	485	-48	527	-62	548	-66

Table 2 Average GRE Scores of Examinees in Education Administration by Most Common Undergraduate Majors

Undergraduate Major	Percent	Mean GREV	Mean GREQ	Mean GREA
Elementary education	25	420	444	471
Secondary education	12	447	487	498
Physical education	4	393	440	454
Education administration	4	399	416	420
English language and literature	4	502	471	513

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