

Academic Performance of Psychiatrists Compared to Other Specialists Before, During, and After Medical School

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Objective: This study was designed to compare psychiatrists with other physicians on measures of academic performance before, during, and after medical school.

Method: More than three decades of data for graduates of Jefferson Medical College (N=5,701) were analyzed. Those who pursued psychiatry were compared to physicians in seven other specialties on 18 performance measures. Analysis of covariance was used to control for gender effect.

Results: Compared to other physicians, psychiatrists scored higher on measures of verbal ability and general information before medical school and on evaluations of knowledge and skills in behavioral sciences during medical school, but they scored lower on United States Medical Licensing Examinations step 3.

Conclusions: The results generally confirmed the authors' expectations about psychiatrists' academic performance. More attention should be paid to the general medical education of psychiatrists.

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Physicians' specialty choices can be influenced by market forces, personality, personal experiences, preferences, and skills (1–7). More than any other specialty—including family medicine, in which laboratory testing and “minor” procedures play a considerable role—psychiatry focuses on interviewing, human behavior, and the doctor-patient relationship and employs a biopsychosocial, as opposed to biomedical, paradigm of health and illness (8, 9). A recent study of 704 physicians demonstrated that compared to other specialists, psychiatrists scored higher on levels of empathy (10). In part because the classic psychiatric disorders have no pathognomonic laboratory tests, interviewing and precise observation (the mental status examination) are the core of psychiatric diagnosis.

Although psychiatry is becoming more neuropsychiatrically oriented and third-party payers and psychiatrists' employers require more productivity and limit time and numbers of visits with patients (11), psychiatrists employ psychotherapy—changing behaviors through verbal interchange (12)—much more than do other medical specialists. A 1987 national study (11, 13) noted that psychiatrists provided five times as many psychotherapy visits as did nonpsychiatrist physicians, and a 1999 survey (14) revealed that the average psychiatrist spent more time (39 minutes/visit) with his or her patients than did other physicians. The next highest average was for internists, who spent 20.7 minutes per visit.

Those who become psychiatrists may come to medical school with predispositions and skills that are different from others who become procedure-oriented specialists. For the reasons mentioned, psychiatrists must be verbally

and interpersonally skillful. Consistent with this notion, medical students interested in psychiatry have scored higher than those interested in other disciplines in the verbal section (15, 16) of the Medical College Admission Test.

In addition, studies (1) indicate that compared with other students and physicians, medical students preferring or choosing psychiatry are more apt to have majored or be more interested in humanities or social sciences than natural sciences (17–20), to be politically liberal (21–23), to have attended a politically liberal college (24), to tolerate ambiguity (25–27), and to be more interested in interpersonal than technological matters (15, 28).

Psychiatrists must have knowledge and skill in general medicine *sufficient* to address—by screening and then treatment or referral—the general health of their patients and to consult for other specialists. But there is no intuitive reason to expect future psychiatrists to perform better than others on tests of scientific or quantitative attainment before medical school or to outscore others on measures of basic medical sciences and in medical licensing examinations. In studies of future psychiatrists (16, 17, 19), their mean science subtest scores on the Medical College Admission Test ranged broadly, from below to above the national average.

Based on these perspectives, this study was designed to test the following hypotheses: psychiatrists, compared to other physicians, would

1. Score higher on verbal ability tests but not on science or quantitative tests taken before medical school
2. Perform better in behavioral science examinations during medical school and in the relevant discipline

TABLE 1. Comparisons Between Psychiatrists and Physicians in Other Specialties on Performance Measures Before, During, and After Medical School^a

Measure	Adjusted F ^b	Psychiatry (P) (N=253)	Family Medicine (FM) (N=986)	Internal Medicine (IM) (N=1,290)	Pediatrics (PD) (N=420)	Obstetrics and Gynecology (OBG) (N=367)	Emergency Medicine (EM) (N=374)
Performance measures before medical school							
Scholastic Aptitude Test							
Verbal	14.8*	105	98	100	101	99	100
Quantitative	2.4	100	99	100	101	99	100
Medical College Admission Test							
General information ^c	9.8*	103	99	101	103	97	100
Science ^e	5.2*	99	99	101	101	99	102
Verbal ^e	5.8*	103	99	101	102	97	100
Reading ^f	1.9	102	99	100	101	98	101
Problem solving ^f	2.9	101	99	100	100	99	99
Verbal reasoning ^g	1.3	102	99	100	101	101	101
Biological sciences ^g	1.2	100	98	100	100	101	100
Performance measures during medical school							
Grade point average							
Year 1	18.6*	95	99	101	100	99	100
Year 2	19.8*	96	97	101	100	98	100
Year 3 examinations	13.1*	96	98	100	100	99	100
Ratings of competence							
Medicine ^h	22.2*	96	98	102	99	100	98
Psychiatry ^h	10.2*	104	99	100	99	100	98
Examinations by the National Board of Medical Examiners (NBME) during and after medical school							
United States Medical Licensing Examinations							
Step 1 (part 1 of NBME)	17.5*	97	98	101	100	98	101
Step 2 (part 2 of NBME)	13.0*	97	98	101	101	98	101
Step 3 (part 3 of NBME)	45.3*	94	102	103	100	98	102
Psychiatry discipline (part 2 of NBME) ⁱ	18.9*	106	99	101	100	98	100

^a All measures were adjusted for gender and transformed to a standardized distribution with a mean of 100 and a standard deviation of 10.

^b Gender effect is partialled out by analysis of covariance.

^c Anesthesiology, pathology, and radiology, for example.

^d Number of observations varies owing to missing data.

^e Available for entering classes before 1978.

^f Available for entering classes between 1978 and 1991.

^g Available for entering classes after 1991.

^h Ratings of clinical competence in third-year clerkships.

ⁱ Available for those who took part 2 of the NBME examinations before 1991.

* $p < 0.01$.

in the medical licensing examinations but not on tests of general medical knowledge

3. Be rated higher in clinical competence in psychiatry clerkships than in other clerkships

Method

Data for this study were retrieved from the database of the Jefferson Medical College's longitudinal study of undergraduate medical education (29), which is approved by Jefferson's institutional review board.

Participants

Study participants included 5,701 physicians (25% women) who graduated from Jefferson Medical College between 1970 and 2001. This sample represents 84% of all graduates with known specialties during the study period. There were 253 psychiatrists (32% women); 986 family physicians (30% women); 1,290 internists (21% women); 420 pediatricians (51% women); 367 obstetrician-gynecologists (39% women); 374 emergency physicians (22% women); 766 hospital-based specialists (23% women) who were defined as anesthesiologists (N=274), pathologists (N=147), and radiologists (N=345), and 1,245 in surgery and surgical subspecialties (11% women). For recent graduates still in residency, the areas of residency were used as the most likely area of future practice (30).

Measures

Physicians' area of practice in the aforementioned specialties was the independent variable. For the dependent variables, physicians were compared on 18 variables in the following categories: 1) before medical school, 2) during medical school, and 3) medical licensing examinations during and after medical school.

For measurements of performance before medical school, the variables included scores on the Scholastic Aptitude Test's verbal and quantitative sections taken during high school and the Medical College Admission Test. For the pre-1978 Medical College Admission Test version, we used general information, science, and verbal scores. For the 1978–1991 version, we used problem-solving and verbal scores, and for the post-1991 version, we used biological sciences and verbal reasoning scores.

For measurements of performance during medical school, the variables included grade point averages in the first and second years of medical school and grades on objective examinations in six core clerkships in the third year of medical school (family medicine, medicine, obstetrics-gynecology, pediatrics, psychiatry, and surgery). The grade point averages are based on objective examinations that have reliability coefficients that are usually in the 0.70s. Also, physicians were compared on the medical school faculty's global ratings of clinical competence in two core third-year clerkships (medicine and psychiatry). Data support the psy-

Hospital-Based Specialties (HB) ^c (N=766)	Surgery or Surgical Subspecialty (SU) (N=1,245)	Comparison ^d
101	99	P > all others
100	100	n.s.
102	99	P > FM, IM, EM, OBG, SU
102	99	P < EM, IM, HB
101	99	P > FM, IM, EM, OBG, SU
100	100	P > FM, OBG
101	100	n.s.
98	99	n.s.
102	99	n.s.
100	101	P < all others
99	101	P < all but FM
99	101	P < all but FM
98	101	P < all others
99	100	P > all others
99	100	P < all but FM and OBG
100	99	P < all but FM and OBG
97	98	P < all others
100	98	P > all others

chometrics (e.g., predictive validity) of these clerkship ratings (31).

For measurements on medical licensing examinations during and after medical school, the variables included scores on steps 1, 2, and 3 of the United States Medical Licensing Examinations—formerly parts 1, 2, and 3 of the National Board of Medical Examiners (NBME) examinations—and scores on the psychiatry discipline of NBME part 2. We did not ascertain failure rates on the United States Medical Licensing Examinations (32), and the NBME (G.F. Dillon, NBME, personal communication) does not ascertain United States Medical Licensing Examinations failure rates by specialty.

Statistical Analysis

All dependent variables were transformed to a distribution with a mean of 100 and a standard deviation of 10 to facilitate comparisons of the magnitudes of differences. Because of differences in medical school performance (33), we controlled for the confounding effect of gender by using analysis of covariance in which gender was a covariate.

Results

The adjusted means and the summary results of statistical analyses are reported in Table 1. Before medical school,

psychiatrists reached a significantly higher mean verbal score on the Scholastic Aptitude Test. Similarly, on the Medical College Admission Test's verbal section, psychiatrists outscores their counterparts in family medicine, internal medicine, emergency medicine, obstetrics-gynecology, and surgery. On the Medical College Admission Test reading section, psychiatrists scored significantly higher than family physicians and obstetrician-gynecologists. On the Medical College Admission Test's general information section, psychiatrists outscores physicians in family, internal, and emergency medicine; obstetrics-gynecology, and surgery. No statistically significant difference was observed between the psychiatrists and others on the Scholastic Aptitude Test's quantitative section and on the Medical College Admission Test's problem-solving, verbal reasoning, and biological sciences sections.

During the first year of medical school, psychiatrists did not perform as well as others (Table 1). Performance comparisons in the second year of medical school and the third-year objective examinations showed that while psychiatrists performed as well as family physicians, these two groups scored lower than their cohorts. Comparisons on global ratings of clinical competence in third-year clerkships revealed that psychiatrists obtained the highest and the lowest clinical competence ratings in psychiatry and medicine clerkships, respectively.

Regarding medical licensing examinations, in the examination of sciences basic to medicine (step 1, formerly part 1, and step 2, formerly part 2), while psychiatrists scored as well as family physicians and obstetrician-gynecologists, their mean score was lower than that for other physicians. Psychiatrists outscores all other physicians on the psychiatry and behavioral science discipline of the licensing examinations (for examinees who took the NBME part 2).

On step 3 (formerly part 3), psychiatrists' scores fell below their step 1 and 2 scores. Also on step 3, they scored lower than other physicians, including family physicians, whose scores rose dramatically from their step 2 scores, and obstetrician-gynecologists, whose scores were identical with their step 1 and 2 scores.

Similar patterns of results were obtained in additional statistical analyses in which the findings were compared for the three decades of study, indicating that the patterns of results are relatively unchanged in different time periods. Illustrative examples include psychiatrists' Scholastic Aptitude Test verbal scores and United States Medical Licensing Examinations step 3 scores. In 1970–1979, psychiatrists and pediatricians obtained the highest mean score on the Scholastic Aptitude Test's verbal section (mean=106, SD=10), significantly higher than internists (mean=103, SD=10), family physicians (mean=101, SD=10), obstetrician-gynecologists (mean=101, SD=9), and surgeons (mean=100, SD=11). From 1980 to 1989, psychiatrists obtained the highest mean score (mean=104, SD=10), which differed significantly from the other specialist groups (mean scores ranged from 101 [SD=10] for pediatrics to 97

[SD=10] for obstetrics-gynecology). From 1990 to 2001, psychiatrists scored the highest (mean=104, SD=9), significantly higher than physicians in any other specialty; mean scores ranged from 100 (SD=9) for pediatricians to 97 (SD=9) for family physicians.

For United States Medical Licensing Examinations step 3, we found that from 1970 to 1979, psychiatrists scored significantly lower (mean=93, SD=10) than internists (mean=105, SD=11), emergency physicians (mean=102, SD=10), family physicians (mean=101, SD=10), pediatricians (mean=99, SD=10), surgeons (mean=99, SD=9), hospital-based specialties (mean=98, SD=10), and obstetrician-gynecologists (mean=97, SD=10).

From 1980 to 1989, psychiatrists scored significantly lower (mean=95, SD=10) than internists, family physicians (mean=102, SD=10), emergency physicians (mean=101, SD=10), pediatricians (mean=100, SD=9), and obstetrician-gynecologists (mean=99, SD=10), but the differences between psychiatrists and hospital-based specialists (mean=97, SD=11) and surgeons (mean=97, SD=9) were not significant. From 1990 to 2001, psychiatrists scored significantly lower (mean=95, SD=9) than emergency physicians (mean=102, SD=8), family physicians (mean=101, SD=10), pediatricians (mean=100, SD=9), and obstetrician-gynecologists (mean=99, SD=10), but not significantly lower than surgeons (mean=97, SD=9) and hospital-based specialists (mean=96, SD=9).

Discussion

Our findings support our first hypothesis about higher performance of psychiatrists in verbal ability and essentially equal performance in science and quantitative tests before medical school. Our second hypothesis was also confirmed, as psychiatrists performed better on psychiatry and behavioral science examinations in medical school and in medical licensing examinations. Our third hypothesis about better ratings in psychiatry clerkships was also confirmed.

Our finding that psychiatrists scored lower than other physicians on step 3 of the medical licensing examination and that family physicians, internists, and emergency physicians scored best is consistent with those reported by Gonnella and colleagues (34, 35) and Dillon and colleagues (36). Early career specialization provides less exposure to a wide variety of clinical situations (34, 35). Those who pursue residencies (e.g., family medicine, internal medicine, and emergency medicine) that expose them to a broad spectrum of general medical conditions during their first postgraduate year are expected to score higher on step 3, which assesses "delivering general medicine care to patients" (37, p. 3). Psychiatrists' low scores on United States Medical Licensing Examinations step 3, after having performed similarly to family physicians and obstetricians on steps 1 and 2, could be partially explained on this basis.

Our findings raise several questions. What do our data about psychiatrists' and other specialists' academic performance mean in terms of the eventual quality of care and patient health outcomes they eventually provide? Do psychiatrists' comparatively better performances on measures of verbal skill in their psychiatry clerkships and on the psychiatry section of step 2 of the NBME translate into better mental and general health outcomes for their patients? Also, since general medical conditions are common among psychiatric patients (38–42), do psychiatrists' relatively low scores on an examination in general medicine (i.e., step 3) predict poorer general or mental health outcomes for their patients?

The literature on the predictive validity of standardized written medical licensing examinations in terms of the eventual quality of patient care and patient health outcomes provides very limited information (43, 44). Tamblyn (43), who wrote in 1994 that "research on the predictive validity of credentialing examinations for medical practice and patient outcome is nonexistent," recently demonstrated among 912 family physicians in Quebec (44) the predictive validity of the Medical Council of Canada Qualifying Examination, a written examination typically taken in the final year of medical school. The physicians who scored highest on the Medical Council of Canada Qualifying Examination scored higher during their first 4–7 years of practice than their family physician colleagues on six clinical performance indicators (e.g., mammography screening rate, continuity of care, and disease-specific as opposed to symptom-specific prescription rates) known to be associated with clinical outcomes and costs of care. Of course, findings from a study of Canadian generalists do not necessarily generalize to American psychiatrists.

Our results strongly suggest a need for studies of the extent to which psychiatrists' scores on licensing examinations are eventually associated with the outcomes—general medical as well as psychiatric—of their patient care. Without such validity studies, it is difficult to make definitive recommendations for curricula for third- and early fourth-year medical students planning psychiatric careers or for postgraduate first-year psychiatry residents over and above the recommendations (45) and guidelines (46) that already exist. It would also be valuable for the National Board of Medical Examiners to ascertain failure rates of the United States Medical Licensing Examinations step 3 by specialty. This, too, could facilitate curriculum planning.

Based on our findings, it seems reasonable to recommend that in providing career counseling to medical students planning psychiatric careers and career counseling and program planning for first-year residents that faculty advisors and program directors should be familiar with each of their trainees' knowledge (including United States Medical Licensing Examinations data, when possible) and skills in general medicine. This familiarity should guide the planning of rotations, coursework, and study pro-

grams related to the general medical care of psychiatric patients.

A limitation of this study is that the results are from one school only and, hence, cannot automatically be generalized to all schools nationally. Nevertheless, the past 30-year track record of the study shows a consistent record of replication by the Jefferson research team and by researchers from other medical schools (47, 48).

In summary, our findings generally confirmed our expectations about psychiatrists' performances before, during, and after medical school. More attention should be paid to the general medical education of psychiatrists.

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