Predictive Validity of Two Specialty

Preference Inventories

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Many medical students have difficulty choosing a specialty (1) and more students change their early choices than stay committed to them (2). To help students choose a specialty, psychologists have devised interest inventories that provide students with information about their preferences. The two most promising inventories are the Medical Specialty Preference Inventory (MSPI) (3) and the Medical Specialty Preference Scales (MSPS) (4). However, the authors of these inventories provide only preliminary support for their predictive accuracy. Thus, the two studies reported herein examined the predictive validity of the MSPI and the MSPS.

Methods

The MSPI consists of 199 items about medical activities and settings. Students rate each item on a seven-point scale. The student responses are scored on 40 factors that characterize the practice of medicine. A student's scores on these 40 factors are compared to the scores obtained by reference groups of practicing physicians. This comparison yields scores on six practitioner-based scales: internal medicine (MED), obstetrics-gynecology (OBG), pediatrics (PED), psychiatry (PSY), surgery (SUR), and family medicine (FAM).

The MSPS uses the 325 items on the Strong Campbell Interest Inventory (SCII). Rather than dealing with medical activities and settings, the SCII items deal with school subjects, occupational titles, and types of people. To devise the MSPS, Gough administered an earlier version of the SCII to 956 freshman medical students. After these

students had begun medical practice, an analysis of their responses identified items that differentiated among students who had chosen different specialties. Gough selected 40 items to constitute each of 10 student-based scales: MED, OBG, PED, PSY, SUR, FAM, anesthesiology (ANES), ear-nose-throat (ENT), pathology (PATH), and radiology (RAD).

Two consecutive classes of students at a midwestern medical school voluntarily participated in the present study during their clerkship year. The first class (n=71) completed the MSPS in January, 1984; the second class (n=73) completed the MSPI in January, 1985. The inventories were scored by commercial services. To test the predictive validity of the inventories, each student's highest and second highest scale scores were compared to the specialty that student obtained in the National Resident Matching Program (NRMP). An accurate prediction or hit was scored when one of these scales matched the specialty that a student obtained in the NRMP.

Results

MSPS. The highest scale score yielded accurate predictions for 13 of 71 students. This 18% hit rate is slightly better than the 10% (1-in-10) expected by chance. The hit rate varied considerably among the 10 scales. No hits were scored for RAD (0 students out of the 7 students predicted by the MSPS to choose a residency in radiology actually obtained that specialty, or 0/7), ANES (0/2), and ENT (0/3). Hits were scored for SUR (2/2), FAM (4/8), PATH (1/18), MED (2/3), PSY (1/17), PED (2/7), and OBG (1/4). The 13 profiles for which the highest scale yielded an accurate prediction were removed to analyze the predictive

accuracy of students' next highest scale score. The second highest scale yielded accurate predictions for 16 of the remaining 58 profiles. Second scale hit rates were: ANES (1/6), ENT (0/4), OBG (2/3), SUR (3/7), FAM (1/4), PATH (0/8), RAD (1/5), MED (6/10), PSY (1/6), and PED (1/5). Combining these results, either one of the two highest scales for each student accurately predicted the specialty choice of 29 of the 71 students (41%).

MSPI. The highest scale score yielded accurate predictions for 35 of 73 students. This 48% hit rate is considerably better than the 17% (1-in-6) expected by chance. The 48% hit rate is conservative because 13 students selected specialties that could not be predicted by the MSPI: anesthesiology (2), EENT (2), pathology (1), radiology (2), and transitional (6). Hits were scored by each MSPI scale: MED (7/13), OBG (1/7), PED (1/4), PSY (1/3), SUR (14/26), and FAM (11/20). The second highest scale yielded accurate predictions for 12 of 38 students. Second scale hit rates were: MED (7/16), OBG (1/8), SUR (2/5), FAM (2/6), PED (0/2), and PSY (0/1). Combining these results, either one of the two highest scales for each student accurately predicted the specialty choice of 47 of the 73 students (64%).

Discussion

Compared to the 17% chance expectancy level for accurate predictions of the MSPI, the overall predictive accuracy of 48% obtained in this study indicates substantial predictive validity. This finding replicates Zimny's (3) report that the MSPI had a mean accuracy of 51% in a study of students at five different medical schools. Such cross validation should increase user confidence in the predictive accuracy of

the MSPI. Compared to the 10% chance expectancy level for accurate predictions of the MSPS, the overall predictive accuracy of 18% obtained in this study indicates poor predictive validity. The MSPS did not work very well. The results left us wondering why 35 of the 71 students who took it scored highest on psychiatry or pathology but only two of these students chose these specialties. One limitation that must be kept in mind in reviewing the results reported above is that the inventories were not administered to a common sample. Because of this, comparisons made between the MSPI and the MSPS must be interpreted with caution.

The different hit rates for the two inventories may be due to differences in test construction. The MSPI uses practitioner-based scoring keys whereas the MSPS uses student-based scoring keys. The logic leading to student-based keys is a relatively new (1971) and yet to be tested strategy for scale construction. The results of this study leave the wisdom of this strategy open to question. It would be enlightening to construct practitioner-based scales for the SCII and then compare their predictive validity to that of Gough's student-based scales. Also a study that administered the MSPI and MSPS to a common sample would allow us to compare directly the predictive validity of the inventories.

References

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