

# Manual for the Medical Specialty Preference Inventory

## 2nd Edition

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## INTRODUCTION

The Medical Specialty Preference Inventory (MSPI), 2nd Edition, was developed to provide information to medical students and young physicians that will help them choose a medical specialty appropriate to their interests and skills following their graduation from medical school. In addition, some young physicians who entered a residency program upon graduation decide, after a year or two of training in that specialty that they wish to consider a different specialty. The choice of an initial or different specialty can be a challenging one, and the MSPI was created to provide help in making that choice.

The MSPI is an interest inventory that provides overall preference scores for six major medical specialties (internal medicine, family medicine, pediatrics, obstetrics & gynecology, surgery, and psychiatry), and scores on 38 factors, or specific preferences, covering five major categories of medical practice: diseases and problems (10 factors), patients (4 factors), care and treatment (9 factors), knowledge (3 factors), and procedures and services (12 factors). These specialty preference and factor scores can be compared for each specialty, allowing test-takers to match their preferences to those specialties with desired characteristics.

The MSPI described in this manual is a revised version of the original 1976 MSPI.<sup>1</sup> The MSPI was updated in 2002,<sup>2</sup> acquired by the AAMC in 2003, and released on the Careers in Medicine Web site in January 2005. The original MSPI consisted of 199 items, all medical in content, which are answered by students using a 7-point scale to indicate the degree of preference for each item. The stem for each item is “A practice in which I...” Two examples of items are “A practice in which I can make precise diagnoses...” and “A practice in which I discuss death and dying with patients...” The 2000 MSPI revision resulted in a reduction in the number of items to 150.

The rationale underlying MSPI development was to compare the preferences of medical students (or physicians) for certain factors in the practice of medicine with ratings given by physicians in various specialties regarding the extent to which those factors were characteristic of their specialties. Thus, the MSPI relates what students want in medicine to what specialties actually *have*. The MSPI is based on the characteristics of the practice of the specialties themselves rather than the characteristics of the physicians who practice in those specialties.

### The Importance of Measuring Interests

Research findings regarding medical career choice indicate that students choose a specialty for a variety of reasons, including experiences and exposure in medical school, academic performance in relevant clinical clerkships, personality attributes, and ratings of the content of medical practice.<sup>3</sup> Research in the field of vocational psychology indicates that the variable identified as “content of medical practice” may contribute substantially to one’s choice of specialty. Furthermore, this factor is more likely to be related to one’s interest in the content of a specialty. Research data support the theory that

one will be more satisfied, successful, and effective if engaged in interesting work.<sup>4</sup>

To ask a medical student a general question, such as in which area of medicine he or she desires to specialize, will yield limited results based on possibly incomplete, inaccurate, or biased information. The individual might respond with “I am interested in ophthalmology” because he/she had a good experience with their eye doctor or a positive experience in a clinical rotation or because they think that ophthalmology might be interesting, without really knowing what the specialty entails. Instead, the approach taken in the MSPI is to determine which activities or features related to the practice of medicine the individual might find interesting and compare the individual’s responses to the actual characteristics of specific specialties. The compilation of these comparisons yields a broader picture of that person’s interests rather than the information obtained from the answer to a single question.

## ADMINISTERING THE MSPI

The MSPI is administered via the World Wide Web on the AAMC's Careers in Medicine Web site (<http://services.aamc.org/careersinmedicine/login1.cfm>). It is the first of two major approaches to assessing interests in Phase 1 of the Careers in Medicine Program: Understanding Yourself. The second approach, based on the work of John L. Holland, Ph.D., is described elsewhere. Registration on the Careers in Medicine Web site is required to access the MSPI. Access is granted to all medical students, staff, and faculty of US and Canadian medical schools. Instructions for registering and accessing the Careers in Medicine site are provided in a variety of sources, including the Careers in Medicine Student Guide and Advisor Manual, as well as on the Careers in Medicine Web site.

Once users have registered and logged onto the Careers in Medicine Web site, they can access the MSPI by selecting the Understanding Yourself option from any location in the system. The MSPI is available as option 1 in the Interests section of this phase. The directions for completing the instrument are as follows:

“The purpose of the Medical Specialty Preference Inventory, 2nd Edition (MSPI) is to determine what is desirable for you in the practice of medicine. The items describe different aspects of medical practice, and you are to rate each item to indicate how **desirable** that aspect is **for you**. There is no right or wrong rating so base your rating of each item on its **desirability for you**. Your ratings will be used to assess your preference for different medical specialties.

There are 150 items. Use the following Desirability Scale in making your rating of each item. There are seven points on the scale representing different degrees of low (1,2), moderate (3,4,5) and high (6,7) desirability. Using the mouse, click one of the seven scale points to indicate your degree of desirability.”

The user is presented with each of the 150 items individually, as depicted in Figure 1, with instructions to rate the item on a 7-point Desirability Scale. Once the user selects one of the seven scale points to indicate his/her degree of desirability, the next item is displayed and progress is indicated in the progress bar on the page.

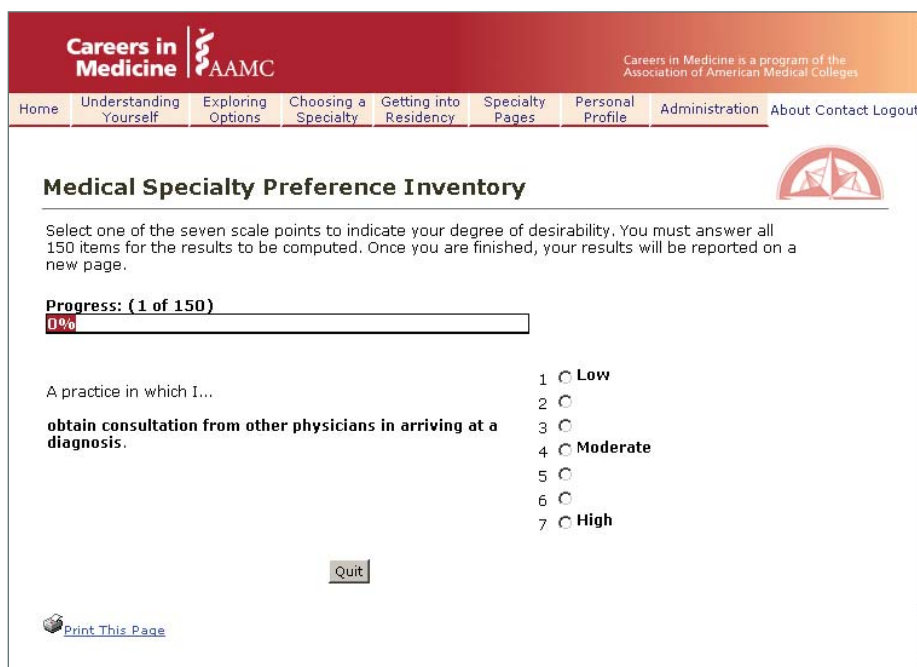


Figure 1. MSPI Administration Page on Careers in Medicine Web site.

## INTERPRETING THE MSPI REPORT

Results are computed and an online report is generated immediately after the student completes the assessment. The scoring program generates two sets of scores. One set consists of an overall specialty preference score for each of 6 specialties, and the other set consists of preference scores for each of 38 factors involved in the practice of medicine (factor scores). The six specialties are internal medicine, obstetrics/gynecology, pediatrics, psychiatry, surgery, and family medicine. The 38 factors are in five general groups: Diseases and problems, procedures and services, patients, knowledge, and care and treatment. The online MSPI report contains a series of pages, accessible by clicking tabs at the top of the report, that contains descriptions of the user's scores and profiles of physician's scores in each of the six specialties. A tab in the report also contains suggestions to the users for interpreting their factor scores and for additional ways of using the scores. These suggestions are designed to help the users, on their own, gain further understanding of their specialty preferences. A brief description of each of the 38 factors is also given. A printer friendly version of the report can also be produced. The complete report is stored online in the student's personal profile and can be accessed at any time.

### Specialty Preference Scores

The first page of the report presents the student's overall level of preference for each of the six medical specialties (see Figure 2). Scores for each specialty were computed using the differences between the student's preference scores and the specialists' scores for 38 attributes related to medical practice. Students will have a high preference score for a specialty if their preference levels for many factors

are similar to the specialists' ratings for those factors. Thus, a student who had a high preference for factors that were highly characteristic of a specialty and who also had low preference for factors that were not very characteristic of a specialty would get a high specialty preference score for that specialty.

Specialty preference scores usually range between 50 and 90. Scores of 73 and higher indicate a preference for a specialty, with higher scores indicating greater preference. Scores of 69 and lower indicate little preference for a specialty, with lower scores indicating lesser preference.

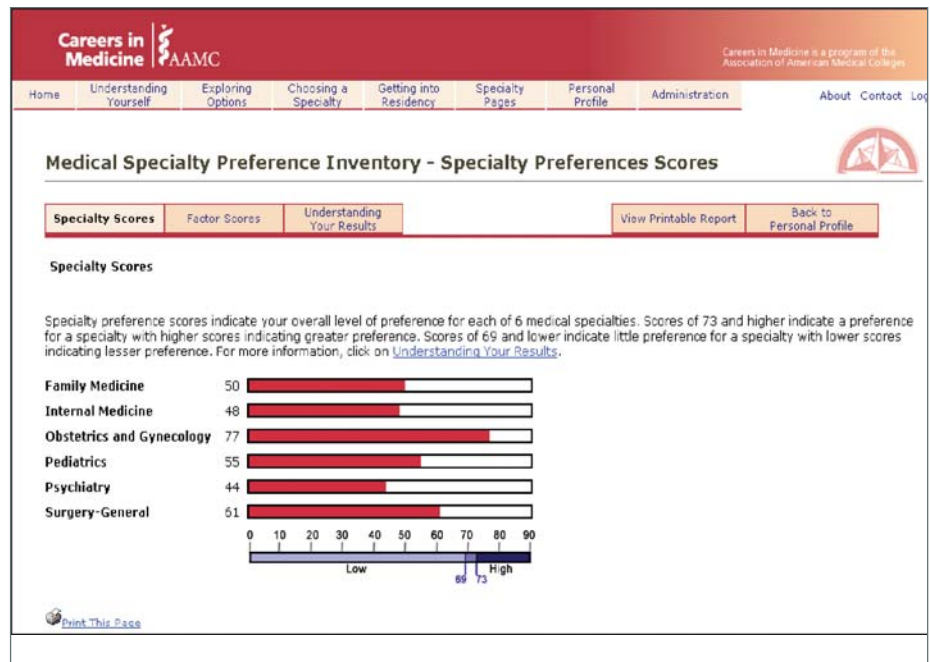


Figure 2. Report of Specialty Preference Scores.

Factor Preference Scores

Figure 3 presents a profile of a user’s scores on the 38 factors. The factor preference score for each of the 38 factors is the mean of the student’s preference ratings for the items that define a factor. The factor preference scores indicate the student’s level of preference or desirability for each of 38 factors in the practice of medicine, based on ratings given to the 150 items. These factors are organized using five groups: Diseases and Problems, Procedures and Services, Patients, Care and Treatment, and Knowledge. A description of the 38 preferences is presented in Appendix A.

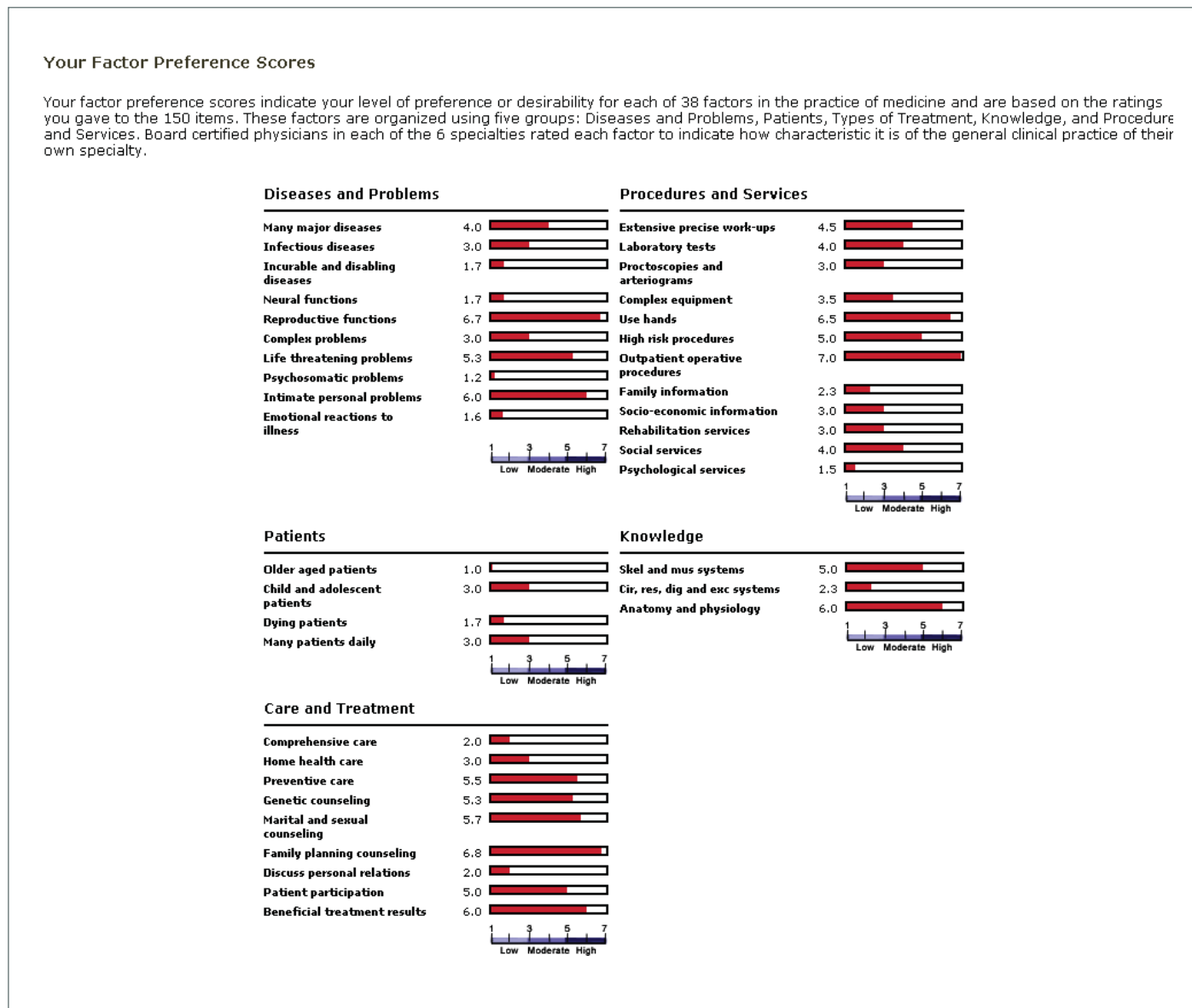


Figure 3: Report of User’s Factor Preference Scores.

Factor Profiles and Factor Score Comparison

A separate profile has been prepared for each of the six specialties based on the 38 factor scores. The scores were obtained from board-certified physicians in each of the six specialties; they indicate how characteristic each factor is of clinical practice in the selected specialty. The 38 scores are arranged on each specialty profile using the five groups described above. The test-taker's scores on the 38 factors are also included in the profile to allow the student to compare his/her preferences with the factors endorsed by practicing physicians as characteristic of each of the six specialties. Figure 4 presents an example of a Factor Score Comparison for Pediatrics.

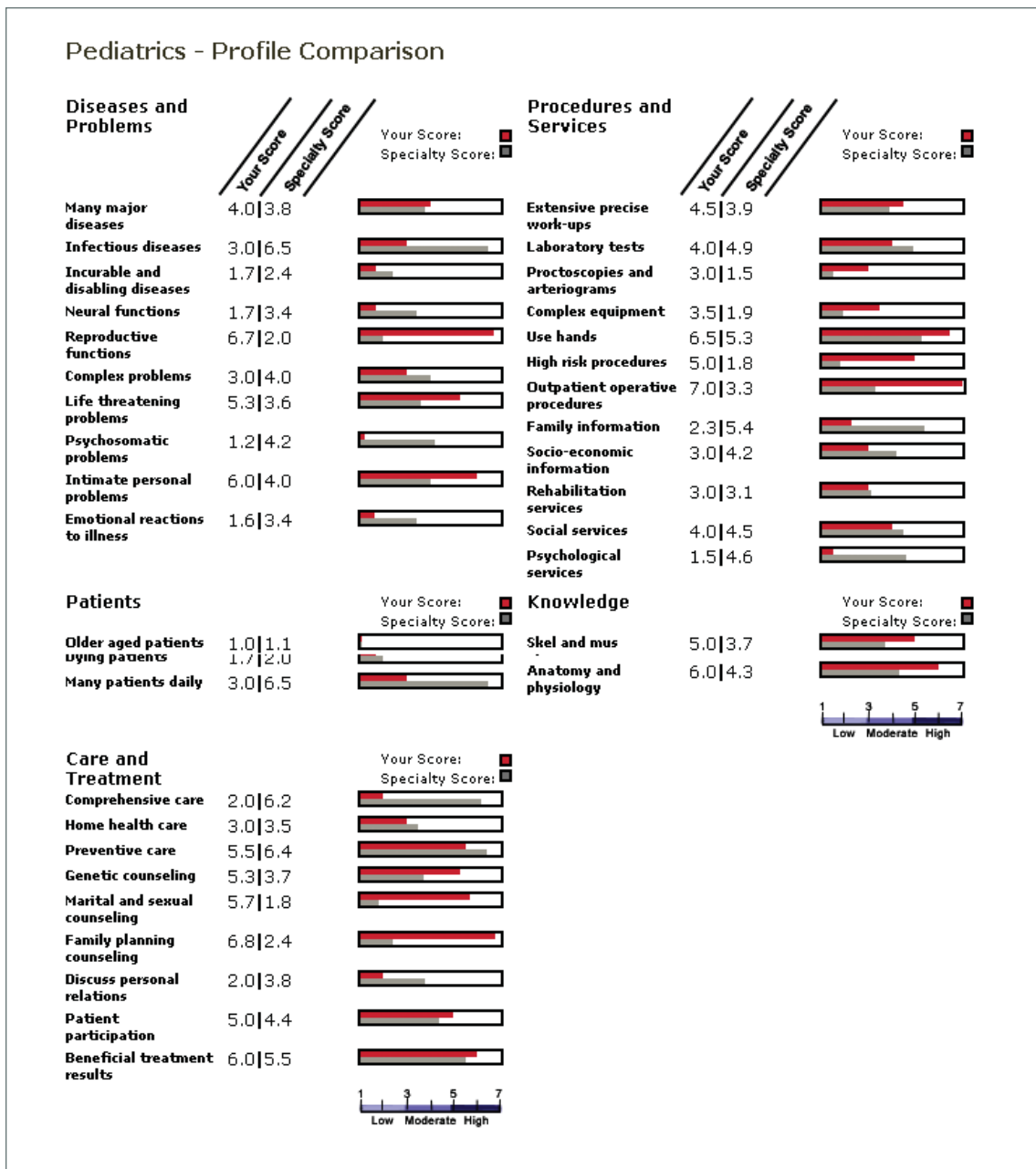


Figure 4. Factor Score Profile Comparison.

## USING THE MSPI

### Counseling and Guidance in Test Interpretation

It is important to recognize that students fall on a continuum of interpersonal needs as they undertake the career planning process. Some of them will need very little guidance and advice, while others will require extensive attention. The Careers in Medicine program operates on the assumption that most will fall somewhere between these two extremes. While not every student will require assistance in understanding the results of their assessments, a large number will, and some of these students will have other, more pressing personal issues that may inhibit their ability to make sound career choices. Career guidance is specifically oriented to help students better understand their individual characteristics as they relate to the choice of a specialty, the characteristics of medical specialties, relevant reality factors, and resulting interactions among these factors. Advisors and career counselors will be very influential in helping students work through any of these issues, questions, barriers, and misunderstandings that may appear as they progress through the Understanding Yourself phase.

#### Four Domains of Career Assessment

The four major areas that are covered during career assessment include:

- Interests—what the student likes
- Values—what is important to the student
- Personality—what the student is like
- Skills—what the student can do

While there are other components to career assessment, these are the major domains that should be considered in career guidance. Each of these domains will contribute important information as the student progresses toward a career choice. Many specialty options will be equally appealing to a student, and may result in a satisfying career. Guidance and counseling can help the student choose among these options and involve, in part, helping the student understand the results of these assessments.

#### Using the MSPI in Career Guidance

The MSPI measures the domain of “interests,” and specifically focuses on those interests relevant to the practice of medicine. The MSPI was developed primarily to assist medical students in choosing a medical specialty. Choice of specialty constitutes a very personal and highly important career decision that bears directly on other decisions, such as those involved in planning electives and applying for residency. It can be a complex process, and the MSPI aids students by providing them with in-depth information about both their specialty preferences and the characteristics of medical specialties.

The MSPI results will provide only a limited description of any specialty. Medical specialties involve other factors and characteristics, and students should consider these other areas by using the knowledge they have acquired about each specialty to supplement the information provided by the 38 MSPI factors. Advisors must guide students to other information sources that may be critical to their success in identifying an appropriate medical specialty. Finally, the MSPI does not represent the full range of medical careers that may be important to a student. Other specialties not referenced in the MSPI should be included in the exploration of medical career options.

It is also important to note that the MSPI is only one of a number of techniques and assessments that can be used in understanding one’s career interests and goals. The Careers in Medicine program offers other assessment tools that can be beneficial when used in conjunction with the MSPI. Many students, however, will prefer a more interpersonal, or intrapersonal, approach to understanding themselves than is possible using the instruments available in the CiM program. These and other approaches to exploring career goals and interests can be processed during career guidance. The MSPI can be used as a beginning point for such guidance activities.

#### Individual Career Guidance with the MSPI

While the MSPI report was originally designed to generate sufficient explanations and suggestions to enable students to use it independently, this option should be chosen with care. The profiles in the report and the suggestions for interpreting and using MSPI scores provide students with fairly comprehensive information. However, research suggests that using computer resources independently of other resources may not be as effective as when they are used in conjunction with a more highly structured and formal counseling and guidance approach.<sup>5</sup> Students should be encouraged to meet with their advisor for help in exploring their MSPI results and understanding their meaning.

An individual session can also help the student explore and identify other un-measured areas that are important to the student’s career choice. Much more than MSPI results alone are considered in a counseling session, but the MSPI and other assessment results can provide relevant shared information as a basis for discussion.

The purpose of individual guidance and counseling is to help the student who may be experiencing difficulty in understanding and interpreting individual results, or who may need additional help in choosing a specialty, exploring barriers to career decision-making, or making other specialty-related decisions (such as selecting an elective program).

An individual session to interpret MSPI results may involve progress through the following steps:

1. Examine the overall specialty preference scores.

Scores of 73 and above are considered high, indicating a preference for the identified specialty. Moderate scores range from 70-72, and low scores fall below 70. Are there any high scores? Which ones? Do these high preference scores fit with the student's perception of his or her interests? Explain what these high scores mean.

Cases in which there are no high preference scores may suggest a number of possibilities:

- The student may have a preference for a specialty not included in the MSPI.
- The student may have a preference for a subspecialty of one of the six specialties or for a particular type of career in one of the specialties, such as research or administration. In such instances, the student would not necessarily obtain a high score for a given specialty because the physicians who provided specialty data during test development were not engaged in subspecialty practice.

- The student may have very limited knowledge or clinical experience and is, therefore, unable to rate with confidence the desirability of many aspects of medicine. Over time, the student will be exposed to a variety of experiences that will help him/her answer the questions more appropriately. These experiences can be obtained through a variety of methods, including preceptorships, job-shadowing, attendance at specialty panels, and completion of clinical clerkships. Students should be encouraged to retake the MSPI once they have had more experience.

In all of these cases, career guidance involves an exploration of what the lack of high scores means, and finding other resources, perhaps within the CiM program, that will help them further explore their career interests.

Are there any specialties that have similar preference scores? In these cases an examination of the factor scores may help the student decide between the two specialties. In general, students will want to look more closely at specialties in which there is agreement between their own scores and the factor scores provided by specialists.

2. Examine the student's factor preference scores.

Which ones are high? Which ones are low? Are they consistent with what the student knows about him- or herself? Low scores should be examined also, primarily to identify those areas in medicine that do not interest the student.

3. Examine the Factor Score Comparison Profiles.

An examination of the factors can provide some information for guidance in the choice of specialty. By comparing the student's factor preference scores with specialists' factor scores, the student

can get an idea of how the high, moderate, and low preferences contributed to his/her overall preference score for a specialty.

a. If both the student's and the physicians' scores for a factor fall at the same level (high, moderate, or low), then it is said that this factor is "in agreement." The more agreement there is between these factors, and the larger the number of factors that are in agreement, the closer the student's profile will fit with the profile of that specialty, and the more likely it is that the student would be satisfied in that specialty. Specialties with more agreement between the student's scores and the specialists' scores should be considered more seriously.

b. There may be times when students achieve the same or similar scores on different specialties. In these cases, an examination of the factor scores may help decide between the two specialties. In general, students will want to look more closely at specialties in which there is more agreement between their scores and the specialists' factor scores.

c. Examine the factor score comparison profiles of those specialties with high specialty preference scores. Identify any factors that significantly deviate from the specialist factor scores. These may identify possible contraindications and raise questions about the student's fit within the specialty. These deviations may also help identify subspecialties, or important areas that may have an impact on the student's satisfaction with the specialty in question.

- d. List the student's high factors and examine them. This may point to the student's ideal specialty. Are there any groups of factors that may help understand the student's preferences? Do they point to any non-MSPI specialties?
- e. List the student's low factor scores. Are there any groups of factors that tend to form a picture? Are there any connections with high factor scores?

The 38 factors will vary in importance for students as they choose a specialty. Students can take into account how important a factor is as they consider the discrepancies between their preference scores and the specialists' scores, giving more or less weight to a discrepancy depending on how important the factor is to them. Physicians practicing in a specialty did not indicate the importance of each factor in the practice of that specialty.

#### 4. Next Steps

As students acquire more knowledge and experience in medicine (and in life), their preferences for each of the factors, or areas of practice, may change. By completing the MSPI at various times, students can monitor and thus better understand changes in their factor preferences as they relate to their specialty selection.

After the student's results have been reviewed with them, time should be spent helping the student to put the results into perspective with information from other assessments or experiences. Other factors, areas of practice, and important features of the student's future career that have not been previously addressed should be explored. Students should consider engaging in other assessment activities or review the CiM Specialty Pages for more information about the specialties of interest. At this time, it may also be necessary to help the

student identify and work through any difficulties or barriers they may be experiencing in the decision-making process. These may be due to a lack of readiness to make a decision, a lack of information about the process, or inconsistent information due a number of internal or external conflicts.<sup>6</sup>

#### Using the MSPI in CiM Workshops

Another approach to the use of the MSPI in helping students choose a specialty is to incorporate it, with other assessment instruments, in small group exercises, workshops, seminars, and/or elective courses. The purpose of the small group sessions would be to introduce the assessment to the students, and to expand students' understanding of specialties and subspecialties, the process of specialty choice, and their own preferences at that time. An introductory workshop, similar to the CiM Understanding Yourself Workshop, could provide general guidance about the process of self-assessment, and introduce the students to the services available in the Careers in Medicine program. The students would then be encouraged take the MSPI and the other assessment instruments on their own time, with a second workshop offered to address general information about, and broad interpretations of, their assessment results. Students could then follow up with individual sessions with their advisors to engage in more specific guidance and to understand better their test results.

#### MSPI and other CiM Assessments

Often students may come to individual sessions with more than just the results of their MSPI. They may also bring results from other areas of assessment, including the Physician Values in Practice Scale, Myers--Briggs Type Indicator results, and skills-related information. Part of the task in the individual session is to help the student

incorporate the results from each of these assessments, and understand how they help in making a specialty choice. MSPI results may help them narrow down specialty options to a smaller number based on their interests. These options can then be considered in light of information from other assessments – how might each specialty provide me with an opportunity to satisfy my important career values? How will my personality style relate to job satisfaction in these career options? Do I have the necessary skills to perform well in this field? Can I develop those skills that I do not possess? The various types of assessments included in the CiM program can help the student answer these questions.

## DEVELOPMENT OF THE MSPI: ITEMS, CRITERION GROUPS, AND SCORING

The MSPI has undergone three rounds of development. The original, unpublished version was developed in 1971, then revised and published in 1979. Thereafter, an unpublished, unreleased update occurred in 2002. The Careers in Medicine edition of the MSPI, the *Medical Specialty Preference Inventory, Second Edition*, is based on this 2002 revision.

Much of the text in this chapter is reprinted, with permission, from the 1979 manual<sup>1</sup> with revisions made based on the 2002 update<sup>2</sup>. Readers are referred to those documents for detailed descriptions of MSPI development.

### Item and Factor Development

The original item pool for the MSPI was developed by examining "...texts and publications in each specialty, responses to a request for items sent to faculty members in each specialty at a medical school, and medical students who had taken the MSPI. The items in the pool were evaluated in terms of relevance to medical practice, breadth of coverage of medical practice, relevance to a specialty, and clearness and conciseness of expression. This evaluation resulted in the selection of 199 items used in the first edition...."<sup>1</sup> Each item began with the phrase, "A practice in which the physician...." A 7-point scale was provided for rating each item (1=low and 7=high).

The items were then sent to a national stratified random sample of 500 physicians in each of the six specialties, with instructions requesting the physicians to rate each statement based on the degree to which it is characteristic of the general, private, clinical practice of the specialty in question, and to exclude subspecialties within the field and specific types of practice, such as academic, hospital, or institutional. The data from returned surveys were then submitted to a series of item and factor-analytic techniques and expert judgments to create the initial 40 factors included in the MSPI.<sup>1</sup>

During the 2000 update of the MSPI,<sup>2</sup> the authors explored the extent to which the 40 factors were characteristic of each of the six specialties. A national random sample of 600 practicing physicians in each of the six specialties between the ages of 30 and 45 was identified, and a survey was sent in which they were instructed to rate each of the 40 factors on a 7-point scale indicating the degree to which they judged the factor to be characteristic of his or her specialty. The cover letter indicated that the rating was to be made of the specialty in general and not of any subspecialty or any specific practice setting. The materials were mailed in fall of 1998. The response rates in this survey were relatively low, ranging from 9% (Internal Medicine) to 21% (Surgery). These data were used to correlate these responses with those from the 1979 ratings. On the basis of this correlational analysis, 38 of the original 40 factors were found to have maintained a high degree of similarity between the two groups. As a result, the remaining two factors with the lowest correlations were eliminated from the instrument.

During the 2002 update, the MSPI also was shortened from 199 to 150 items, with 104 scored items and 46 "filler" items. The 49 non-selected items were removed based on an examination of their usefulness as determined by the

MSPI developers. These 49 items were removed from their position in the listing of the 199 items in the MSPI, thus leaving the 150 items in the same relative position in the updated MSPI as they had in the original MSPI.

### The 38 factor scores

Appendix A contains the name and a brief description of each of the 38 factors that were selected for inclusion in the revised MSPI. The two factors removed from the instrument as a result of the MSPI update are also presented. There are five general groups of factors, each of which relates to a major component of medical practice. The five groups and the factors in each group are: Diseases and problems, factors 1-10; patients, factors 11-14; care and treatment, factors 15-23; know-ledge, factors 24-26; and procedures and services, factors 27-38.

Each factor contains from two to five test items. There are 19 factors with two items, 12 with three items, 5 with four items, and 2 with five items. Appendix B contains the items included in each factor's score. The score for a factor is the mean, rounded off to one decimal place, of the ratings given to the items in the factor. Scores range between 1.0 and 7.0, and are divided into three levels of desirability: Low (1.0 - 3.0), moderate (3.1 - 4.9), and high (5.0 - 7.0). Thus, an individual's factor score represents the level of preference or desirability for the factor. Specialists' factor scores are calculated in much the same way, and represent the extent to which each factor is characteristic of practice in the specialty as viewed by the physicians in that specialty. The mean of all the specialists' scores on each factor was computed for each specialty separately, and can serve as a specialty-specific norm to which individuals can compare their desirability factor scores. Appendix C contains the mean factor scores for each of the six specialties.

## Overall Scores

The overall score for a given specialty is based upon the differences between the participant's scores obtained on the 38 factors and the mean factor scores for that specialty. The scale for overall scores was developed to be distinct from the factor scales to reduce the likelihood of confusion in interpreting the two sets of scores. These overall preference scores range from 0 – 100, with a high overall score representing a high level of preference for the specialty. Most scores range between 50 and 100.

### *Computing overall scores*

The formula for computing an overall score for a specialty is:

$$ABS(100 - 10 ((\sum \text{difs}/38)2.34))$$

In this formula, the absolute difference between the obtained factor score and the mean score for the specialty is determined for each of the 38 factors. The sum of the differences is divided by 38 to determine the mean difference for the factors. The mean difference is then multiplied by 2.34, which is the average difference between the most extreme possible obtained factor score and the actual mean factor score for each of the 38 factors for each specialty separately. For example, the mean score on Factor 1 for Internal Medicine is 5.9 and the most different possible obtained score is 1.0, yielding a difference of 4.9. This process was carried out for the remaining 37 factors for Internal Medicine, and the mean of the maximum possible differences for the 38 factors was computed. The entire process was carried out for each of the remaining five specialties. The mean of the maximum possible differences for each specialty was divided into 10.00, and the mean of the six resulting values was 2.34, which was the value required to convert the maximum possible differences over all the specialties to a value of 10.00. By multiplying the  $(\sum \text{difs}/38)2.34$  value

by 10, the maximum possible difference that could be obtained became 100, thus yielding a theoretical scale of 0 to 100 for the overall score. The last step consisted of subtracting the  $10((\sum \text{difs}/40)2.34)$  value from 100 in order to convert a low difference score into a high level score.

### *Test-takers' overall scores*

Once an individual completes the MSPI, an overall preference score is computed for that person in each specialty. A high preference score for a specialty results when the differences between the individual's scores and the specialists' mean scores on the 38 factors are small, and a low score results when these differences are large. The contribution made to the overall score by the factor components can be determined by comparing the individual's scores and the specialists' score for each factor.

### *Specialists' overall scores*

An overall score for each physician in a specialty was computed using the formula described above. For a given specialist, the overall score indicates the extent to which that specialist's characterization of the specialty agrees with the specialty's characterization by all of the specialists in the criterion group. The mean of the overall scores for all the physicians in each specialty was 79.00, with a standard deviation of 6.00. This mean and standard deviation was used to establish a norm for interpreting test-takers' overall preferences. A score of 73, representing one standard deviation below the generalized mean, was established as the cut-off for "high" scores, and a score of 70.00 (representing one and one-half standard deviations below the generalized mean) was established as the cut-off for "low" scores. Thus, overall specialty preference scores of 73 or higher are considered high, while scores below 70 are considered low.

## Scored and non-scored items

The updated MSPI contains 104 scored items and 46 filler items. The 46 non-scored items provide a broader coverage of medical practice than would result if only the 104 items were included in the MSPI. Medical students have indicated that they learn something worthwhile about themselves and about medical practice as a result of completing the MSPI, independent of the scores they subsequently receive. Inclusion of the 46 items enhances this learning. In addition, as experience with the use of the revised MSPI increases, it is reasonable to assume that different applications of the MSPI will be identified, some of which require the development of new scales. By retaining the 46 items, greater opportunities are provided for the development of new MSPI scales.

## RELIABILITY AND VALIDITY

A brief report of the reliability and predictive validity of the six overall specialty scales is discussed in this chapter. For more detailed coverage of this topic, please review the appropriate manuals and research reports.

### Reliability

Zimny<sup>1</sup> reported on the reliability and validity indices used in the initial development of the MSPI. In general, reliability of the overall specialty scales was assessed by computing correlation coefficients for odd-factor overall scores and even-factor overall scores for each overall scale separately. With the exception of two coefficients for Pediatrics and Internal Medicine, the reliability coefficients estimated by the Spearman-Brown formula range between the 0.70s to the 0.90s. Within the limitations of the odd-even method of assessing reliability, it may be concluded that the reliability of the overall scales is generally high, with the Pediatrics scale showing the lowest reliability coefficient.

### Validity

To assess the predictive validity of the MSPI, it is necessary to determine the agreement between overall specialty scores and subsequent choice of a medical specialty. Results of the National Resident Matching Program (NRMP) were used to represent the initial choice of medical specialty. The NRMP contains data about the initial specialty choice of medical students as they enter into residency training. Zimny conducted three studies of the predictive validity of the MSPI in the MSPI's initial development using NRMP data. He found that the level of predictive accuracy over all specialties ranged from about 50 to 55 percent. Zimny reported that this range

is well above the conservative chance expectancy level of 17% accuracy, indicating that a substantial relationship exists between specialty preference scores on the MSPI and subsequent specialty choice. This relationship appears to hold for at least the first two postgraduate years. In an independent study, Savickas, Brizzi, Brisbin, and Pethtel<sup>7</sup> assessed the predictive validity of the MSPI and one other medical specialty preference inventory, and found that the overall predictive accuracy, or "hit rate," of the MSPI was 59% in comparison to the other instrument, with a "hit rate" of 19% – only slightly higher than would be expected by chance.

## RESEARCH USING THE MSPI

The MSPI is a versatile instrument that can be used in different ways in conducting research and evaluation studies. Early research on the previous editions of the MSPI addressed utilization and consistency in medical student specialty choice;<sup>8,9</sup> development of an initial profile for emergency medicine;<sup>10</sup> studies of the predictive validity of the MSPI;<sup>11,12</sup> and a study of sex differences in medical specialty preferences.<sup>13</sup> Other research possibilities exist, as well. The 38 factors can be used by themselves, independent of any factor scores, for example, by requesting that the 38 factors be ranked in order of the importance that they are perceived to have in some situation or area. In still another approach, Zimny suggested that physician scores for the 38 factors in each of the six specialty groups “provide criterion data against which data obtained from other groups can be compared (for example, how internists characterize family medicine as compared to how the family physicians characterize their own specialty).”<sup>1</sup>

Zimny also suggested a number of other areas of research that would be useful in the ongoing implementation of medical student career development, as well as in the area of program evaluation. One could:

- Use MSPI scores as pre-post assessments for clinical clerkship rotations to detect changes in student perceptions of selected specialties;
- Compare student and faculty factor preference scores to note differences between the two groups, to note changes in preferred directions by students, and to identify areas for possible improvement;

- Conduct longitudinal studies of medical student specialty preference and to detect changes over time; or
- Establish student preferences as they relate to certain educational goals of the school (e.g., focus on primary care) at entry into medical school and later to determine if interests have changed in support of, or away from, the stated goal.

The expansion of the MSPI to other specialties is essential to help students to select among the myriad medical career options available to them. A student's receipt of low specialty preference scores on all specialties in the MSPI program may mean that the student prefers other specialties or subspecialties not currently included in the MSPI. The expansion of the MSPI to cover a broader range of specialties is necessary, with a special emphasis on those specialties typically entered by medical students during the first two years of graduate medical education.

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## Appendix A

# Medical Specialty Preference Inventory

### Factor Descriptions

#### Diseases and Problems

1. Many major diseases: Deal with many major diseases using many major diagnostic and treatment procedures
2. Infectious diseases: Treat infectious diseases, including the use of the results of throat cultures
3. Incurable and disabling diseases: Deal with incurable and progressively disabling diseases
4. Neural functions: Deal with neural functioning using detailed knowledge of the nervous system and results of EEGs brain scans
5. Reproductive functions: Deal with the reproductive system and the results of estrogen level tests and of fertility studies
6. Complex problems: Deal with complex diagnostic, treatment, and patient management problems
7. Life threatening problems: Deal with life threatening medical problems and emergency situations
8. Psychosomatic problems: Deal with psychosomatic problems using a detailed knowledge of emotional processes and human personality
9. Intimate personal problems: Deal with intimate personal problems of patients
10. Emotional reactions to illness: Discuss with patients their emotions and feelings relative to illness, disease, and hospitalization

#### Patients

11. Older aged patients: Deal with older patients, including the use of nursing homes
12. Child and Adolescent Patients: Deal with children and adolescents as patients
13. Dying patients: Deal with dying patients including discussion of death and dying with them
14. Many patients daily: Treat many patients and many minor diseases each day

#### Care and Treatment

15. Comprehensive care: Provide a broad range of medical services and be the point of entry into the health care system for patients
16. Home health care: Make provisions for home health care and use the services of visiting nurses
17. Preventive care: Provide preventive health care, including the education of patients in proper health habits
18. Genetic counseling: Provide genetic counseling using detailed knowledge of genetics and of a patient's genetic history
19. Marital and sexual counseling: Provide counseling for marital and sexual problems
20. Family planning counseling: Counsel patients about family planning, contraception, and abortion
21. Discuss personal relations: Discuss my emotional reactions to patients and try to help them improve their relationships
22. Patient participation: Provide treatment involving active participation by the patient and the use of verbal interactions and patient education
23. Beneficial treatment results: Provide treatment that quickly produces obvious beneficial results

#### Knowledge

24. Knowledge of skeletal and muscular systems: Use detailed knowledge of the skeletal and muscular systems
25. Knowledge of circulatory, respiratory, digestive and excretory systems: Use detailed knowledge of the circulatory, respiratory, digestive, and excretory systems
26. Knowledge of anatomy and physiology: Use detailed knowledge of anatomy and physiology

### Procedures and Services

27. Extensive precise work-ups: Do extensive diagnostic work-ups using precise well-defined diagnostic procedures
28. Laboratory tests: Use the results of laboratory tests in diagnosis and treatment
29. Proctoscopies and arteriograms: Use the results of proctoscopic examinations and of arteriograms
30. Complex equipment: Use complex equipment in diagnosis and treatment
31. Use hands: Use hands in obtaining diagnostic information and in treating patients
32. High risk procedures: Use diagnostic and treatment procedures that involve high risk to the patient
33. Outpatient operative procedures: Do operative procedures on an outpatient basis and suture wounds
34. Family information: Use information about the patient's family and family history in dealing with the medical problem
35. Socioeconomic information: Use information about the patient's socio-economic status and about community conditions in dealing with the patient's medical problems
36. Rehabilitation services: Use the services of rehabilitation treatment centers and of physical therapists
37. Social services: Use the services of community social agencies and of social workers
38. Psychological services: Use the services of psychologists and the results of psychological tests

### Factors Removed During 2000 MSPI Update:

32. Standard procedures: Use mainly standard diagnostic and treatment procedures
40. Referred to and give consults: Receive referrals from other physicians and provide consultation to physicians in other specialties

## Appendix B Items Scored For Each Factor

Factor Number	Factor Name	Item Number	Item Description
<b>Diseases and Problems</b>			
1	Many major diseases	70 81 93	deal with a large number of major diseases. use a wide range of major diagnostic procedures. use a variety of major treatment procedures.
2	Infectious diseases	61 112	treat infectious diseases. use the results of a throat culture.
3	Incurable and disabling diseases	2 34 94	deal with incurable diseases. deal with complex diseases that do not respond to known treatment procedures. deal with diseases that are progressively disabling.
4	Neural functions	40 126 138	use the results of an EEG. use a detailed knowledge of the nervous system. use the results of a brain scan.
5	Reproductive functions	55 117 129	use the results of an estrogen level test. use a detailed knowledge of the reproductive system. use the results of fertility studies.
6	Complex problems	51 72 104 118	deal with complex diagnostic problems. deal with complex patient management problems. make complicated differential diagnoses. deal with complex treatment problems.
7	Life threatening problems	83 133 144	deal with life threatening medical problems. deal with life threatening emergency situations. make life and death decisions as part of daily practice.
8	Psychosomatic problems	28 56 105 134 146	treat diseases that are greatly influenced by the personality of the patients. detect nuances of patients' emotional reactions in making a diagnosis. deal with psychosomatic problems. use a detailed knowledge of the effects of emotions on bodily processes. use a detailed knowledge of human personality.
9	Intimate personal problems	31 44	elicit intimate personal information from patients. deal with the patient's intimate personal problems.
10	Emotional reactions to illness	92 106 120 131 140	discuss with patients their rejection or denial of their illness. discuss with patients their emotional reactions to a disease. discuss with patients their feelings about being hospitalized. discuss with patients their anger toward their illness. discuss with patients their unrealistic treatment goals.
<b>Patients</b>			
11	Older aged patients	123 135	deal with the older age population as patients. use the services of nursing homes.
12	Child and adolescent patients	109 143	deal with children as patients. deal with adolescents as patients.
13	Dying patients	7 24 111	discuss death and dying with patients. tell patients they have a terminal illness. deal with the dying patient.

Factor Number	Factor Name	Item Number	Item Description
14	Many patients daily	6 137	treat many minor diseases each day. treat a large number of patients each day.
<b>Care and Treatment</b>			
15	Comprehensive care	43 58 73 88	provide a broad range of medical services. am the first physician contacted by a patient for any of a variety of medical problems. constitute the point of entry into the health care system for patients. provide comprehensive health care.
16	Home health care	85 148	use the services of visiting nurses. make provisions for home health care.
17	Preventive care	52 64	educate patients in proper health habits. provide preventive health care.
18	Genetic counseling	9 47 119	use a detailed knowledge of genetics. provide genetic counseling. take a detailed genetic history.
19	Marital and sexual counseling	12 16 21	provide pre-marital sexual counseling. provide counsel to patients about their marital problems. counsel patients about their sexual problems.
20	Family planning counseling	33 37 69 95	deal with unwed mothers as patients. discuss contraception with patients. provide counseling about abortion. counsel patients about family planning.
21	Discuss personal relations	57 79	help patients to improve their relationships with others. discuss with patients my emotional reactions to them.
22	Patient participation	65 97 102	depend upon the active participation of the patient in the treatment process. use verbal interactions with patients in treating them. must educate the patient about the disease in order to achieve effective treatment.
23	Beneficial treatment results	36 82	provide treatment, the benefits of which are readily apparent to the patient. can see immediate results of treatment.
<b>Knowledge</b>			
24	Knowledge of skel and mus systems	49 53	use a detailed knowledge of the skeletal system. use a detailed knowledge of the muscular system.
25	Knowledge of cir, res, dig and exc systems	60 71 74 84	use a detailed knowledge of the circulatory system. use a detailed knowledge of the respiratory system. use a detailed knowledge of the digestive system. use a detailed knowledge of the excretory system.
26	Knowledge of anatomy and physiology	35 45	use a detailed knowledge of physiology. use a detailed knowledge of anatomy.

Factor Number	Factor Name	Item Number	Item Description
<b>Procedures and Services</b>			
27	Extensive precise work-ups	18	deal with diseases about which a large amount of concrete diagnostic information can be obtained.
		78	do extensive diagnostic work-ups.
		121	use precise diagnostic procedures.
		141	use diagnostic procedures involving a precise sequence of well defined steps.
28	Laboratory tests	4	use the results of laboratory tests during treatment.
		29	use routine laboratory tests in making a diagnosis.
		149	use the results of laboratory tests in making a diagnosis.
29	Proctoscopies and arteriograms	20	use the results of a proctoscopic examination.
		150	use the results of arteriograms.
30	Complex equipment	26	use highly complex equipment in making a diagnosis.
		90	use very complicated equipment in treatment.
31	Use hands	50	use my hands to obtain information for diagnostic purposes.
		77	use my hands in treating a patient.
32	High risk procedures	48	use diagnostic procedures that involve high risk to the patient.
		96	use treatment procedures that involve high risk to the patient.
33	Outpatient operative procedures	113	do operative procedures on an outpatient basis.
		115	suture wounds.
34	Family information	14	use information about a patient's family in dealing with the medical problem.
		107	take a detailed family health history.
		125	deal with the effects of a patient's illness upon the family.
35	Socio-economic information	139	use information about the patient's working conditions in dealing with the medical problem.
		142	use information about the patient's socioeconomic status in dealing with the medical problem.
		145	use information about community conditions in dealing with a patient's medical problem.
36	Rehabilitation services	62	use the services of rehabilitation treatment centers.
		116	use the services of physical therapists.
37	Social services	22	use the services of community social agencies.
		99	use the services of social workers.
38	Psychological services	39	use the services of psychologists.
		46	use the results of psychological tests.
<b>Unscored Items</b>		1	obtain consultation from other physicians in arriving at a diagnosis.
		3	use treatment concepts and procedures that undergo rapid change.
		5	can accurately predict the course of diseases.
		8	provide long-term non-hospital care.
		10	have options available in carrying out a given treatment procedure.
		11	can make precise prognoses.
		13	provide consultation to physicians in a variety of specialties.
		15	prescribe drugs which have potentially dangerous side effects.
		17	make referrals to physicians in various specialties.
		19	provide hospital care.
		23	use a detailed knowledge of pharmacology.
		25	can use one of a number of different treatment procedures for a given disease.

Factor Number	Factor Name	Item Number	Item Description
		27	use a detailed knowledge of public health.
		30	provide emergency care.
		32	use a detailed knowledge of nutrition.
		38	use a detailed knowledge of biochemistry.
		41	give detailed treatment instructions to a patient.
		42	provide corrective treatment for physical abnormalities.
		54	use mainly standard treatment procedures.
		59	provide definitive treatment.
		63	use mainly standard diagnostic procedures.
		66	counsel patients about the long-term management of their disease.
		67	use the results of a complete blood analysis.
		68	treat patients of all ages.
		75	repeatedly use the same diagnostic procedures each day.
		76	use the results of a biopsy.
		80	receive referrals from other physicians.
		86	obtain consultations from other physicians in planning the treatment programs.
		87	do routine yearly physical examinations.
		89	request an autopsy.
		91	provide treatment which serves primarily to control rather than to cure the disease.
		98	use a detailed knowledge of the endocrine system.
		100	use diagnostic concepts and procedures that undergo rapid change.
		101	provide frequent and intensive treatment for a patient.
		103	use the results of an x-ray examination.
		108	use knowledge specific to several medical specialties.
		110	take a detailed developmental history.
		114	provide follow-up care to patients after discharge from the hospital
		122	prescribe many different medicines.
		124	treat patients on an intensive care unit.
		127	provide care for an entire family.
		128	provide palliative treatment.
		130	observe symptoms that are subject to varying interpretations.
		132	deal with a wide range of patient problems.
		136	take a detailed sexual history.
		147	use the services of dietitians.

## Appendix C

### Mean MSPI Factor Scores For Six Specialties

Factor Number	Factor Name	Family Practice (N=344)	Internal Medicine (N=177)	Obstetrics & Gynecology (N=247)	Pediatrics (N=293)	Psychiatry (N=235)	Surgery (N=286)
<b>Diseases and Problems</b>							
1	Many major diseases	5.5	6.1	4.0	3.8	3.4	6.0
2	Infectious diseases	6.2	5.6	3.7	6.5	1.3	3.4
3	Incurable and disabling diseases	4.6	5.3	2.2	2.4	4.2	3.8
4	Neural functions	4.3	4.5	1.5	3.4	4.2	2.6
5	Reproductive functions	4.4	2.9	6.5	2.0	2.3	2.4
6	Complex problems	5.1	6.4	4.1	4.0	5.5	5.6
7	Life threatening problems	5.2	5.7	4.3	3.6	3.6	6.3
8	Psychosomatic problems	5.9	5.1	4.8	4.2	6.5	2.9
9	Intimate personal problems	6.1	5.1	6.3	4.0	6.8	3.0
10	Emotional reactions to illness	5.1	4.6	3.8	3.4	6.3	3.3
<b>Patients</b>							
11	Older aged patients	6.1	5.9	2.9	1.1	4.2	4.7
12	Child and adolescent patients	6.2	2.5	3.2	6.6	4.7	3.9
13	Dying patients	5.5	5.5	2.2	2.0	3.7	5.1
14	Many patients daily	6.4	4.5	5.5	6.5	2.7	3.5
<b>Care and Treatment</b>							
15	Comprehensive care	6.6	5.6	4.4	6.2	2.2	2.6
16	Home health care	5.2	4.7	2.5	3.5	2.6	3.8
17	Preventive care	6.0	5.2	5.5	6.4	3.5	2.7
18	Genetic counseling	2.8	2.7	4.8	3.7	2.7	1.6
19	Marital and sexual counseling	5.0	3.1	6.0	1.8	5.5	1.5
20	Family planning counseling	5.4	2.5	6.6	2.4	3.8	1.5
21	Discuss personal relations	5.0	4.0	4.2	3.8	6.5	2.2
22	Patient participation	5.8	5.3	5.0	4.4	6.4	4.1
23	Beneficial treatment results	5.1	4.5	5.6	5.5	3.9	6.3
<b>Knowledge</b>							
24	Knowledge of skel and mus systems	4.6	3.3	2.8	3.7	1.6	5.1
25	Knowledge of cir, res, dig and exc systems	5.1	5.8	3.8	4.7	2.0	6.2
26	Knowledge of anatomy and physiology	4.7	4.9	5.1	4.3	2.4	6.5
<b>Procedures and Services</b>							
27	Extensive precise work-ups	4.9	5.8	4.3	3.9	3.1	5.3
28	Laboratory tests	6.0	6.4	5.1	4.9	3.1	5.7
29	Proctoscopies and arteriograms	4.5	5.0	1.8	1.5	1.4	6.1
30	Complex equipment	2.9	3.7	3.5	1.9	1.4	5.0
31	Use hands	6.0	4.9	6.4	5.3	1.5	6.7
32	High risk procedures	2.3	3.4	3.1	1.8	1.6	5.2
33	Outpatient operative procedures	5.9	1.8	5.1	3.3	1.1	6.5
34	Family information	6.0	5.2	4.2	5.4	5.9	3.8
35	Socio-economic information	5.6	4.5	3.3	4.2	5.7	2.9
36	Rehabilitation services	5.2	4.6	1.8	3.1	3.1	4.0
37	Social services	5.2	4.7	3.9	4.5	5.8	3.6
38	Psychological services	4.2	3.3	2.9	4.6	5.8	2.1