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Development of an Instrument to Measure the Climate of Professionalism in a Clinical Teaching Environment

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Abstract

Background
This report describes an instrument that measures professionalism in clinical environments, reports its psychometric properties, and discusses its potential uses.

Method
The survey asked students (n = 371) to report the frequency of peers', residents', and faculty's professionalism behaviors and faculty's professionalism teaching, and it asked faculty (n = 28) to self-assess their teaching of professionalism. The authors

investigated the instrument's reliability, convergent validity, and ability to detect differences between groups.

Results
Coefficient alphas were .75 or higher. Correlations showed positive relationships between students' perceptions of professionalism behaviors and faculty's professionalism teaching. *t*-tests indicated that preclinical students rated faculty's professionalism behaviors higher than did clinical students, and students rated faculty's professionalism

teaching higher than the faculty rated themselves.

Conclusions
The psychometrics of the instrument's scores are sound. The instrument has potential to meet the Liaison Committee on Medical Education's mandate to measure professional standards within learning environments and to track effects of interventions promoting the professionalism of learners and faculty.

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The learning environments of medical schools and their affiliated hospitals play a critical role in shaping the professional behavior of learners and faculty.[1] These environments can also affect the type and quality of assessment of professional behavior that occurs[2,3] and whether and how unprofessional behavior of learners and faculty is remediated.[4,5] Recognizing the importance of environments in professionalism, accrediting agencies such as the Liaison Committee on Medical Education (LCME) require the regular evaluation of "the learning environment to identify positive and negative influences on the maintenance of professional standards and conduct and develop appropriate strategies to enhance the positive and mitigate the negative influences."[6] Reliable and valid ways to characterize the learning environment for professionalism are clearly warranted.

Available techniques to evaluate the environment's professionalism range from participant observation through surveys.[7] The most ubiquitous of these

are surveys. Some surveys measure the climate of an environment by eliciting perceptions of learners and faculty about professionalism in the environment or by asking individuals about their own professionalism.[8] Empirically driven surveys in medical education have yielded group data about specific aspects of the environment relevant to professionalism such as patient-centeredness[9] or mistreatment.[10] Surveys derived from social science theories on school climate, ethical climates, and organizations have produced descriptions of other aspects of the environment related to professionalism such as teamwork, warmth, respect, or social responsibility.[11–13] Although these surveys measure important dimensions of the environment, they are limited in scope and do not address the full range of constructs embedded in our understanding of medical professionalism.[14]

Comprehensive data about professionalism in the medical environment have come from a survey that asked students and residents about the behaviors of residents at five institutions by operationalizing the American Board of Internal Medicine (ABIM) definition of professionalism.[15] However, internal consistency of only some of the survey items was acceptable, and

validity was not examined.[15] An environmental survey using a similar, comprehensive definition of professionalism that would have more acceptable reliability and estimated validity properties would be useful.

The purpose of this paper, then, is to describe an instrument focused on measuring professionalism in the clinical environment in a comprehensive fashion, report its psychometric properties, and discuss its potential uses.

Method

The authors undertook this research at a six-year combined baccalaureate-MD degree program. Throughout the entire six years, students participate in small learning communities led by docents. The docents are physicians who serve as role models, advisors, and teachers for the students. In the first two years of the program, students spend several hours each week shadowing their docents in clinical settings. In year three, students are assigned to another docent, a half-day per week, to learn ambulatory care medicine. In the remaining three years of the program, students stay with the latter docent to continue their studies in the

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continuity clinic and to complete annual, two-month, inpatient rotations in internal medicine where students also interact with residents.

The survey instrument asked students to report the extent to which student peers, residents, and faculty act professionally in a clinical environment and the extent to which docents teach about professionalism in that environment. The instrument also asked docents about their own teaching of professionalism.

For content validity, the authors used the ABIM definition of professionalism as a conceptual guide to describe examples of professional and unprofessional behavior.[14] This professionalism construct includes dimensions of duty/service, honesty/integrity, accountability/responsibility, excellence, altruism, and respect/caring/compassion. In writing survey items describing positive and negative behaviors related to these dimensions, the authors drew from behaviors that students at the school had mentioned in focus groups as examples of behaviors they considered to be professional and unprofessional.[16] The authors derived the items about teaching professionalism from the literature on role modeling.[17]

The survey contained four sets of items that students answered. The first three sets elicited their perceptions about the frequency of student, resident, and faculty professional and unprofessional behaviors observed in the clinical environment. Students were asked to answer the same 12 items about the observed behaviors of student peers, then residents, and then faculty, for a total of 36 items. Examples of these items include the following: students/residents/faculty "advocate for the well-being of patients, students, colleagues, the community and/or the medical profession" and students/residents/faculty "complain about professional obligations." The fourth set of items elicited students' perceptions about the frequency with which docents teach about professionalism. There were 10 items in this set including the following examples: my docent "creates an environment of warmth and mutual respect in relating with students" and my docent "explicitly describes the way a student should relate to a patient in a difficult situation."

A fifth set of items asked docents to self-assess the frequency of their teaching about professionalism by answering 10 questions that had parallel content to the students' items about teaching professionalism. Additional examples of these items include "I teach about professionalism" and "I set clear expectations for students' professional behavior."

Respondents used a four-point Likert-type scale (Always = 4, Usually = 3, Sometimes = 2, Never = 1) to answer the items. Negatively worded items were reverse scored so that high scores reflected more positive behaviors.

The authors considered the items on each scale to be summative, assumed that the items were unidimensional, and, therefore, used Cronbach alpha to estimate the internal consistency of each set of items. Using disattenuated correlations, they explored convergent validity with the hypothesis that students' ratings of perceived professional behavior in the clinical setting would be positively related to students' perceptions of the extent to which docents taught about professionalism. Prompting this hypothesis are the following assumptions: (1) the authors believe that teaching about professionalism will contribute to a positive professionalism environment in a clinical setting which, in turn, influences all participants in the setting and increases the likelihood that they will behave professionally, (2) learners who receive professionalism teaching may be more likely to behave professionally, and (3) faculty who teach professionalism may behave more professionally. If these assumptions are true, the correlations between students' ratings of behaviors and their ratings of docents' teaching will be positive and, therefore, provide evidence of convergent validity. The authors also examined the validity of the instrument's scores by ascertaining whether the survey would detect differences in perceptions of professionalism of preclinical and clinical students. On the basis of research elsewhere,[18] the researchers thought that preclinical students might have more positive perceptions of others' professionalism behaviors than clinical students. The authors used independent-samples t-tests to detect differences and calculated effect sizes. To avoid spurious findings attributable to conducting multiple comparisons between preclinical

and clinical students in a large dataset, the authors applied the Bonferroni correction to adjust the alpha levels for each of the three t tests; the adjusted alpha level is .05 divided by 3, or .016. The authors also used an independent-samples t-test with effect size to compare students' perceptions about docents' teaching with docents' own perceptions of their teaching. From an institutional self-study, the authors knew that docents thought their skills in teaching professionalism could be improved.

In 2004, after obtaining IRB approval, the authors sent recruitment letters to the student body (N = 626) to invite them to complete the survey anonymously. Of these students, 358 were in the first three years of the curriculum, where about one fourth of the courses are clinical, and 268 were in the final three years that are largely clinical. The authors also sent recruitment letters to the 34 faculty members who serve as docents for years three to six.

Students and faculty completed paper-and-pencil surveys during regularly scheduled class or faculty meetings. To maximize the response rate, the authors also e-mailed the surveys to participants and requested that they complete and return the survey.

Results

Respondents totaled 243 preclinical students, 128 clinical students, and 28 docents. The response rate was 68% for preclinical students, 48% for clinical students, 82% for docents, and 60% overall.

Table 1 shows coefficient alphas for each of the five sets of survey items along with means and standard deviations. All of the item sets obtained a coefficient alpha of .75 or higher, providing evidence that the scales are unidimensional.

All of the disattenuated correlations between students' perceptions of peers' ($r = 0.31$), residents' ($r = 0.44$), and faculty's professionalism ($r = 0.56$), on the one hand, and their perceptions of docents' teaching of professionalism, on the other, were positive, as expected, and significant at the .001 level. The strength of these correlations was moderate to low.

As hypothesized, preclinical students (mean = 39.80, SD = 4.98) rated faculty's professionalism significantly

Table 1

Descriptive Statistics and Coefficient Alphas

Category	No.	Mean	SD	Coefficient alpha
Professional behaviors				
Students*	359	35.66	4.75	.82
Residents*	123[†]	36.42	3.96	.75
Faculty members*	341	39.37	4.71	.79
Professionalism teaching—student assessment[‡]	349	33.01	6.63	.91
Professionalism teaching—faculty self-assessment[‡]	27	30.04	3.50	.78

* The range of possible scores is 12 to 48. Higher scores indicate higher perceptions of professionalism.
[†] Rated by clinical students only.
[‡] The range of possible scores is 10 to 40. Higher scores indicate higher perceptions of professionalism teaching.

higher than did clinical students (mean = 38.58, SD = 4.07; P = .016, d = 0.261). However, preclinical and clinical students' perceptions of the docents' professionalism teaching did not differ (P = .031, d = 0.245) with the conservative P value, nor did their perceptions of their peers' professionalism differ (P = .225, d = 0.124).

There was a significant difference between clinical students' perceptions of their docents' professionalism teaching and docents' perceptions of their own teaching (P = .045, d = 0.294). As anticipated, clinical students (mean = 31.93, SD = 6.91) rated the extent to which docents teach about professionalism higher than docents (mean = 30.04, SD = 3.50) rated themselves.

Discussion

The findings provide evidence that the instrument designed to measure the climate of professionalism in clinical teaching environments produces scores that seem to be reliable and valid for such a purpose. The internal consistency of the items on each of the five scales met or exceeded acceptable standards for the reliability of instruments used in the social sciences. The high coefficient alphas point to the possibility of reducing the number of items on the scale; however, eliminating items needs to be balanced with the potential harm done to the content validity of the instrument. The correlations offer some evidence of convergent validity in that there was a positive relationship between students' perceptions of peers', residents', and faculty's professional and unprofessional behaviors and the extent to which their docents teach about professionalism.

There was a particularly strong relationship between the docents' teaching and their professionalism behaviors as perceived by the students. In addition, the instrument has some ability to detect differences in perceptions between groups. As hypothesized,[18] preclinical students rated others' professionalism more positively than did clinical students; however, with our conservative choice of a P value, only their perceptions of faculty's professionalism were significantly different. Lastly, the instrument was able to detect a difference between students' perceptions of docents' professionalism teaching and docents' perceptions of their own teaching. It is not surprising that the students rated their docents' professionalism teaching more positively than the docents rated themselves. The docents had indicated previously that they would like to improve their professionalism teaching; their desire might indicate that they had somewhat negative perceptions of their own teaching. Another explanation for this finding lies, perhaps, in potentially differing expectations of students and docents regarding teaching about professionalism. Docents may have higher expectations of themselves than students do. Additionally, students may perceive some of the docents' actions as professionalism teaching, whereas the docents had not consciously intended those actions to be perceived in that way. In summary, the instrument fills a gap identified in the existing literature[7–13] regarding measuring the climate of professionalism in that it is based on a comprehensive definition of professionalism[14] and has evidence of

acceptable score reliability and emerging evidence regarding the validity of the scores.

The current study was limited in the sample used; only students from one, unique institution participated in the project. Additionally, after examining the frequency distributions for each item, the anchors (Always, Usually, Sometimes, and Never) need to be reconsidered. The percentage of respondents choosing the answer options Never and Always was quite low on many of the items. Perhaps anchors such as Mostly, Often, Sometimes, and Rarely would encourage respondents to use the entire set of answer options. Third, some of the correlations and effect sizes found in the study were small. Lastly, the survey was anonymous, precluding the ability to nest learners within docents for analyses.

In the future, the authors plan to expand their investigation of the instrument to include residents as well as participants from other institutions. Additionally, after recruiting the necessary sample size, the authors plan to conduct a factor analysis to examine construct validity by exploring whether there are any subscales for the instrument. Lastly, it will be important to continue to study the validity of the instrument content for use with a variety of stakeholders, clinical contexts, and institutions. An important first step is to test the instrument in institutions that have longitudinal learning communities that might be comparable with the school's docent system.

Because there is some evidence of score reliability and validity for this instrument, medical educators can feel confident in its ability to provide valuable information about the professionalism climate of clinical teaching environments. In turn, this information can help institutions meet the LCME's requirement to measure and maintain high professional standards within the learning environment.[6] The instrument also has the potential to be used in evaluating the effectiveness of initiatives designed to improve the professionalism of students, residents, and faculty as well as faculty's teaching of professionalism.

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