RESEARCH ARTICLES

Development of a Multidimensional Scale to Measure Work Satisfaction Among Pharmacy Faculty Members

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Objectives. To develop a multidimensional scale to measure work satisfaction among pharmacy faculty members and determine its reliability and validity.

Methods. A literature review was used to assist in the generation of 36 statements that putatively comprise the satisfaction construct. The 25 items meeting a priori criteria in a modified Delphi procedure were included in a questionnaire sent by e-mail to 4,228 pharmacy faculty members. Principal axis factoring and scale purification procedures were used to identify a plausible factor structure.

Results. Using responses acquired from 885 pharmacy faculty members, 6 domains of work satisfaction were identified: resources for scholarship, institutional support and reward, requirements for tenure and promotion, availability of a graduate program, collegiality, and teaching environment. The overall measure demonstrated construct validity, while each domain subscale exhibited relatively high internal consistency reliability.

Conclusions. The overall work satisfaction measure and each subscale derived from composite domains can be used to identify sources of discontent and/or track interventions designed to improve work satisfaction.

Keywords: job satisfaction, work satisfaction, faculty, quality of work life, pharmacy

INTRODUCTION

The specialization of disciplines and commercialization of higher education have played a part in higher expectations of faculty members by university administration.^{1,2} Faculty members are expected to continue to procure extramural funds, even in the face of shrinking federal dollars. At the same time, colleges and universities are being held more accountable for teaching outcomes.³ In this increasingly high-pressured climate, faculty members are beginning to perceive erosions in their autonomy, resulting in greater levels of stress with a deleterious impact on quality of work life.⁴⁻⁶

These phenomena would appear to hold true in pharmacy, particularly as a workforce shortage among practitioners has seemingly begun to impact the supply of pharmacy faculty members.⁷ The increased difficulty among faculty members in fulfilling teaching, scholar-

ship, and service roles may be further exacerbated by the challenges among constituent institutions to meet the Accreditation Council for Pharmacy Education's (ACPE) 2007 accreditation standards, which are more prescriptive in the need for budget planning, faculty-to-student ratios, scholarship, and experiential training hours.⁸

While quality of work life is multivariate and complex, satisfaction with one's work is an integral component. Work (job) satisfaction is likely to exhibit both endogenous and exogenous characteristics in complex models depicting quality of work life.^{9,10} On the one hand, satisfaction with one's work has been demonstrated to be highly predictive of productivity, or effectiveness, as well as turnover intentions and other work attitudes.^{5,6,10-12} Similarly, satisfaction is known to have many antecedents, including job stress.¹³⁻¹⁵ Work satisfaction traditionally has been more frequently studied among health care professionals and among persons in occupations with less autonomy.¹⁶⁻¹⁸ Work satisfaction may be more difficult to measure for faculty members, given the autonomous nature of the work and the wide variety of roles and responsibilities assumed by teacher-scholars. Attempts have been made to measure work satisfaction in higher education in general; however, very little attention has been afforded to this phenomenon in academic pharmacy.

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At its simplest, work satisfaction is thought to consist of at least 2 components or domains: an intrinsic domain and an extrinsic domain. As such, the use of 1-item, global measures do not capture the richness and complexity in work satisfaction. Although single-item measures of work satisfaction are common throughout the educational literature, it has been argued that such global measures may be applicable only in situations in which a construct is unidimensional, clear to the respondent, and sufficiently narrow.¹⁹ The reliability of such measures is also questionable.²⁰ Additionally, the practical implications or uses from such measures are limited.

Some researchers have employed relatively generic, albeit widely used and reliable instruments such as the Job Description Index (JDI) and the Minnesota Satisfaction Questionnaire to measure work satisfaction among faculty members.²¹⁻²³ Evaluations of nursing faculty members found that those faculty members surveyed were relatively satisfied with domains such as the work itself, supervision, the job in general, and coworkers, but not with salary and opportunities for promotion.^{16,18} However, the utility of such instruments in measuring work satisfaction among academicians in health professions is questionable, at best. For one, the instruments were developed and originally worded to reflect the job of an hourly worker rather than a salaried professional.²¹⁻²³ The autonomy inherent in faculty work may result in favorably skewed responses on items measuring intrinsic job components. Moreover, such measures fail to capture the complexity in academics' responsibilities, making it difficult to apply the results in a meaningful way.

Other researchers have attempted to measure work satisfaction among faculty members by compartmentalizing their primary activities. Rosser⁹ and Maple et al²⁴ measured faculty work satisfaction by examining the benefits accrued from serving in the expected teaching, scholarship, and service roles. Cadman suggests, however, that satisfaction is not derived exclusively from performing roles, but more so the environmental contexts within which they are performed, such as the clarity of expectations accompanying the roles.¹³ Consequently, measures which assume that satisfaction is derived wholly from "doing something" do not account for factors like interpersonal interactions, relationships, expectations for growth and advancement, pecuniary rewards, and the dissonance between expectations and realities faced in the job.

The oft-cited work of Herzberg argues for the presence of various motivator-hygiene factors that individuals experience within organizations.^{25,26} Motivators refer to intrinsic components of the job such as self-growth and actualization. What Herzberg termed "hygiene," or the extrinsic components of one's work, includes the contex-

tual or environmental aspects of work life that tend to be driven by organizational issues, such as one's perceived role in departmental or school governance, relationships with colleagues or administration, perceived institutional support, and agreement with organizational policies and procedures. While Herzberg's research was not conducted among academicians, Rosser's application introduces additional domains that may impact an academician's work satisfaction.¹⁰ Additionally, Matier⁹ applied March and Simon's²⁷ decision-making theory to faculty retention, examining aspects of satisfaction such as congeniality with colleagues and rapport with administration; and Smart²⁸ examined satisfaction in the context of organizational, salary, and career domains. The intention of these studies, while useful in describing domains that may impact an academician's work satisfaction, was to examine faculty retention and work life in general, and they did not produce a quantifiable measure of academicians' satisfaction with work.

There has been relatively little on academicians' work satisfaction reported in the pharmacy literature. Latif and Grillo examined satisfaction among junior pharmacy faculty members using a multiple-item measure soliciting respondents' perceptions of satisfaction with various roles comprising teaching, scholarship, and service domains.⁶ As previously described, the use of such an approach undervalues other factors that might impact satisfaction. Moreover, their measure exhibited questionable discriminant validity to distinguish it from a measure of stress they employed in the same study. Jackson and colleagues also used academic role functions to identify sources of burnout among pharmacy faculty members.²⁹

Nair and Gaither examined pharmacy faculty members' satisfaction more generally and specified relationships between work and non-work domains with one's overall life satisfaction.³⁰ The study focused primarily on the impact of non-work domains on satisfaction, but also found that faculty members were modestly satisfied with the collegial atmosphere in which they worked. While important in contributing putative components comprising pharmacy academician work satisfaction, Nair and Gaither's study was exploratory and did not seek to develop a comprehensive measure of satisfaction, *per se*.

The purpose of this study was to develop a comprehensive measure of pharmacy faculty member work satisfaction that could be used to monitor satisfaction over time or pursuant to managerial initiatives or changes in organizational climate and/or leadership. Specific objectives were to: (1) generate a set of items representing various factors that might comprise a pharmacy faculty member's satisfaction with their work; (2) purify the work

satisfaction measure from data gathered in a nationwide survey of pharmacy faculty members; and (3) estimate the reliability and construct validity of the work satisfaction measure.

METHODS

An extensive review of the pharmacy and education literature was conducted during the spring and summer of 2005 to identify instruments previously used to measure satisfaction among faculty members. The search was conducted on International Pharmaceutical Abstracts, Medline (PubMed), CINAHL, ERIC, PsycINFO, and Social Sciences Index databases and employed the following terms: *job satisfaction*, *work satisfaction*, *career satisfaction*, *faculty*, *academia*, *academicians*, *quality [of] work life*, *stress*, *burnout*, *turnover*, and *turnover intentions*. The latter terms were utilized to capture studies or reports that measured or discussed satisfaction, but whose primary interest might have been to describe other components of work life quality. The investigators sought information from editorials, commentaries, and review articles in addition to reports of empirical studies to identify additional factors that might contribute to faculty work satisfaction that were not necessarily included in other instruments. The search was expanded to include other articles not found in the initial review but referenced in the articles uncovered in the initial review. There were no time (date of publication) restrictions placed on the search.

The above procedures were instructive in generating an initial list of 36 work satisfaction item statements. A modified Delphi procedure was conducted to refine and potentially add to this list. A Delphi is a "systematic procedure for arriving at a reasoned consensus."³¹ It is a process whereby a panel of experts is asked to solve a problem or generate ideas without the biases inherent in face-to-face meetings such as with focus groups and is called upon "... whenever it becomes necessary to choose among several alternative courses of action in the absence of an accepted body of theoretical knowledge that would clearly single out one course as the preferred alternative."³¹ It involves repeated iterations of opinion questionnaires with the expectation of a convergence in opinion.³² In this phase of the study, the 36 items comprised a first-round survey questionnaire sent via e-mail to 20 pharmacy faculty members identified on the basis of convenience in various disciplines both within and outside the investigators' institution who had agreed previously (through e-mail or telephone contact by the study investigators) to provide feedback. Participants were asked to assign a level of importance to each of the 36 items on a Likert-type scale ranging from 1 (not important at all) to 7 (extremely important). A comment section was

appended to the questionnaire wherein participants were encouraged to submit additional items/factors that might comprise the satisfaction construct. Sixteen of the invited participants provided a response to the questionnaire and, based on the comments they provided, the investigators generated 4 additional items that addressed departmental collegiality both at and outside of work, merit-based rewards, and salary issues. A second round of the modified Delphi procedure was employed for participants to respond to the newly proffered items and to respond to open-ended questions about how to handle certain dilemmas that arose during the process (eg, how to phrase certain items, whether to combine or disentangle other items). Fifteen of the participants provided additional feedback, further aiding in the construction and selection of the items to ultimately comprise the measure. Twenty-five items met a priori criteria that they be assigned a mean and median value ≥ 5.0 (out of 7) by the Delphi participants on the importance scale and were thus used to comprise the satisfaction measure.

The resultant pharmacy faculty member work satisfaction measure was one component of a survey questionnaire aimed to elicit responses to a number of quality-of-work life and work productivity variables not discussed in this paper. Scale item responses were measured on a 6-point Likert-type scale (1 = extremely dissatisfied to 6 = extremely satisfied). The target population was the faculty members comprising the 4,228 persons with a valid e-mail address acquired from the American Association of Colleges of Pharmacy Roster of Faculty and Professional Staff.³³ Faculty members from each discipline, including biological and library sciences, were eligible to receive the survey. The self-administered, anonymous survey was delivered via SurveyMonkey, a web-based survey-hosting service. Adaptations of procedures recommended by Dillman were employed to strengthen the rate of return.³⁴ This included sending a prenotification e-mail during the last week of August 2005, followed 1 week later by an e-mail with a brief cover letter and link to access the survey instrument. Reminder e-mails that included a link to the survey were sent to nonresponders approximately 3 and 6 weeks later. Study procedures received exempt status from the University's Institutional Review Board.

Data from SurveyMonkey were imported into a spreadsheet and then into SPSS 13.0 (SPSS, Inc. Chicago, Ill) for analysis. Descriptive statistics were tabulated. Data were subjected to a principal axis factoring procedure to discern the factor structure, and as such describe the latent domains comprising the satisfaction construct. As recommended by Costello and Osborne³⁵ the data set was split randomly in 2 sets of cases using a random-number generator with the first subsample

factor analyzed to find a conceptually plausible structure and the second serving as a validation sample. Suspecting relatively high correlations among the factors (domains), an oblique rotation was applied to allow these factors to correlate and assist with interpretation of the data.³⁶ The Kaiser criterion (eigenvalues > 1) and the scree plot to “identify the last substantial drop in the magnitude of eigenvalues” were used to discern the optimal number of factors.³⁷ We established 0.40 as the cut-off point for salient factor loading, even though it has been argued that loadings as low as 0.32 are appropriate.³⁸

The satisfaction measure was further examined and purified through the use of procedures recommended by Nunnally,³⁸ including the calculation of item-to-total (domain, or factor total) correlations, Cronbach’s alpha for each domain, and the resulting Cronbach’s pending removal of each item from the domain. Evidence for the satisfaction measure’s discriminant validity was sought by examining its correlation with other variables that theoretically should exhibit low to relatively modest relationships with the measure, such as stress and teaching self-efficacy.³⁸

RESULTS

One hundred fifty-four e-mail alerts indicating that the e-mail sent was undeliverable were received. Eight hundred eighty-five pharmacy academicians (response rate = 22.7%) completed the questionnaire. Although 4,228 people from the American Association of Colleges of Pharmacy Roster of Faculty and Professional Staff were included in the initial mailing to pharmacy faculty, some e-mail recipients responded to alert us that they were not faculty members and therefore not eligible to participate in the survey. However, since the AACP 2005-06 Profile of Pharmacy Faculty³⁹ reported 4,201 full-time pharmacy academicians in the United States at the time of the survey, the 885 respondents represented at least 21% of all US pharmacy faculty members. Although the survey responses were anonymous, privacy concerns may have prohibited some respondents from providing demographic information. Respondents providing demographic information were primarily male, white, and from public institutions, with a mean age of 43 years (Table 1). Respondents were distributed fairly well in accordance to expectations regarding rank, gender, and race/ethnicity³⁹; however, there was a disproportionately large number of respondents from the social and administrative sciences, which might be due in part to their greater familiarity with survey research and perhaps to many of them knowing the investigators personally and wanting to assist them in making the project successful. As the survey was completely anonymous, there was no means by

Table 1. Demographics Characteristics of the Respondent Population (n = 855)

Variable	No. (%)
Gender	
Male	323 (54.2)
Female	273 (45.8)
Ethnicity	
Caucasian	523 (83.4)
Asian	30 (4.7)
Hispanic	18 (2.9)
African American	14 (2.2)
Other	11 (1.8)
Academic rank	
Instructor/lecturer	10 (0.2)
Assistant professor	258 (42.9)
Associate professor	196 (32.6)
Professor	137 (2.8)
Discipline	
Medicinal chemistry	50 (8.6)
Pharmaceutics	45 (7.8)
Pharmacology/toxicology	51 (8.8)
Pharmacy practice	329 (56.7)
Social and administrative sciences	105 (8.1)
Type of institution	
Public	417 (69.3)
Private	185 (30.7)
Appointment length	
Academic (9 month)	98 (16.2)
Calendar (12 month)	507 (83.8)
Salary	
<\$65,000	38 (6.7)
\$65,000-\$75,000	127 (22.3)
\$75,000-\$85,000	158 (27.9)
\$85,000-\$95,000	122 (21.5)
>\$95,000	122 (21.5)

*Reported numbers do not add up to 885 due to missing data

which to determine the source of responses (eg, by college or school).

Principal axis factoring revealed a 6-factor solution that was identified and subsequently confirmed by the second subsample of the respondent population. The resultant model explained 62.4% of the variance of responses to the satisfaction construct. Evidence suggests that all of the items but one be retained in future applications of the measure. The item, “secretarial assistance,” did not successfully load and exhibited poor item-to-total correlations with the existing domains.

The resultant domains and item compositions are shown in Table 2. The first domain, “resources for

scholarship,” consists of items depicting resources and reputation that are helpful for scholarly productivity. The second domain, “institutional support and reward,” consists of items depicting support from key administrators and the perceived adequate distribution of pecuniary rewards. Items comprising the third domain, “requirements for promotion and tenure,” pertain primarily to perceived appropriateness and transparency in the criteria used to evaluate faculty members. Items comprising the fourth domain, “availability of a graduate program,” relate to the availability of graduate students to assist with teaching and research, along with coincident opportunities to mentor them. The fifth domain, “collegiality,”

pertains to the nature of interactions with department colleagues. The sixth domain, “teaching environment,” consists of items describing the teaching environment in which the respondent performs.

The relatively high factor loadings, the lack of cross-loading by items onto more than 1 domain (not shown), and the seemingly logical groupings of items into their corresponding factors provide evidence of the measure’s convergent validity. Discriminant validity was evidenced by relatively low correlations with other variables, such as stress and teaching self-efficacy, meaning that the measure used to assign values to work satisfaction was distinct among other construct measures. A correlation matrix

Table 2. Scale Domains, Factor Loadings, and Reliability

Mean*	Factor (Domain)	Factor Loading
Factor 1: Resources for scholarship ($\alpha = 0.817$, overall mean = 3.80)[†]		
Available computer hardware/software to meet my research needs	0.534	4.56
Availability of time to pursue scholarship	0.544	3.18
Institutional support for research	0.666	3.37
Opportunities for collaboration with scholars outside of my department	0.635	4.36
My department’s reputation for excellence in scholarship	0.578	3.96
Institutional assistance with seeking funding for my research	0.619	3.35
Factor 2: Institutional support and reward ($\alpha = 0.830$, overall mean = 3.76)[†]		
General support from my department/division chair	0.440	4.28
General support from my dean	0.552	4.07
Institutional efforts in support of the career development of their faculty	0.579	3.68
Salary competitive with other schools of pharmacy	0.771	3.41
Distribution of rewards (ie, salary) based on merit	0.779	3.36
Factor 3: Requirements for promotion and tenure ($\alpha = 0.785$, overall mean = 3.91)[†]		
Clear understanding of the teaching requirements needed for tenure/promotion	0.802	4.22
The procedures used to evaluate a faculty member’s teaching effectiveness	0.671	3.42
Clear understanding of the research requirements needed for tenure/promotion	0.673	4.10
Factor 4: Availability of a graduate program ($\alpha = 0.817$, overall mean = 3.52)[†]		
The opportunity to mentor graduate students	0.713	4.15
The availability of competent graduate teaching assistants	0.851	3.14
The availability of competent graduate research assistants	0.855	3.28
Factor 5: Collegiality ($\alpha = 0.722$, overall mean = 4.25)[†]		
Opportunities for collaboration within my department	0.680	4.46
Mutual respect for other’s scholarly endeavors within my department	0.615	4.27
The social interactions among faculty within my department outside of work	0.799	4.02
Factor 6: Teaching environment ($\alpha = 0.673$, overall mean = 4.68)[†]		
The freedom to design courses as I see fit	0.625	4.87
The quality of students admitted into our program	0.603	4.61
My teaching workload	0.509	4.20
The courses I am assigned to teach	0.702	4.95

*Measured on a 6-point scale where: 1 = extremely dissatisfied; 2 = moderately dissatisfied; 3 = slightly dissatisfied; 4 = slightly satisfied; 5 = moderately satisfied; 6 = extremely satisfied

[†]Cronbach’s coefficient alpha

Table 3. Correlation Matrix of the Relationships Between the Satisfaction Domains and Other Quality of Work Life Variables

	Support for Scholarship	Institutional Support and Reward	Requirements for Promotion and Tenure	Graduate Program Availability	Collegiality	Teaching Environment
Teaching self-efficacy	0.084	0.012	0.115	0.060	0.033	0.042
Research self-efficacy	0.216	0.038	0.207	0.163	0.007	0.063
Research productivity	0.215	0.047	0.149	0.203	0.000	0.052
Organizational commitment	0.554	0.641	0.432	0.255	0.431	0.499
Stress of role fulfillment	-0.304	-0.150	-0.179	-0.109	-0.119	-0.230
Stress of accomplishment	-0.129	-0.126	-0.212	-0.027	-0.152	-0.218

examining the relationships between the individual satisfaction domains and other quality of work life variables is shown in Table 3. Cronbach's alpha values ranged from 0.673 to 0.830, indicating relatively high degrees of internal consistency reliability among items comprising each domain. The values for each domain are shown in Table 2.

Mean responses to each item and domain are shown in Table 2. Responding faculty members expressed the greatest degree of satisfaction with the courses they are assigned to teach, their freedom to design courses, the quality of students they teach, available computer resources to meet their research needs, and opportunities for collaboration within their departments. Faculty members reported less satisfaction with the availability of competent graduate assistants, availability of time to pursue scholarship, institutional assistance with seeking funding for research, and distribution of pecuniary rewards. The composite domain eliciting the highest level of satisfaction was "teaching environment," and that which elicited the lowest level of satisfaction was "availability of a graduate program."

DISCUSSION

This study is among the first to proffer a multidimensional measure of work satisfaction among pharmacy faculty members. The overall measure demonstrated high degrees of construct and discriminant validity, while its resultant 6 domains, addressing both intrinsic and extrinsic motivating factors, exhibited very good internal consistency reliability. Previous work aiming to evaluate satisfaction among junior pharmacy faculty members⁷ borrowed from Serafin,⁴⁰ who conceptualized satisfaction only within the context of fulfillment derived through role performance. Other researchers focused on unique aspects of quality of work life, such as burnout,²⁹ while Nair and Gaither examined overall life satisfaction among pharmacy faculty members.³⁰ While important, these contributions might not be as instructive for faculty members and administrators to use in appraising various components of academic work life.

The measure identified here proffers 6 domains, each with its resultant subscale that might be used by a college

or school of pharmacy or even by a department or division to identify sources of higher or lower morale. The subscale "resources for scholarship" might be useful for identifying perceptions among faculty members that they lack the resources necessary to fulfill their potential in research and could serve as an impetus for dialogue that addresses how the institution or department could enhance its reputation.

Equity and the climate established by college or school administrators appear to be important issues comprising perceptions of the overall support afforded to faculty members. The ability of administrators to impact a positive climate and foster development among faculty members has been reviewed by Latif.⁴¹ This subscale might be used to gauge the effectiveness of efforts undertaken by administrators to do so.

Items that comprise the "teaching environment" subscale speak not only to one's teaching workload, but also to satisfaction with their perceived level of autonomy in teaching. Respondents reported the highest level of satisfaction with the teaching domain. Other studies have suggested that teaching is a source of stress for faculty members.¹⁴ While obligations to fulfill roles may be a source of stress for faculty members, it does not directly follow that they are similarly dissatisfied with their work because of this. For instance, the stress of completing a significant research project or obtaining a large grant may be a very positive stressor for an academician and prove to be a significant source of satisfaction. Furthermore, the items comprising the teaching environment domain do not address the stress that might result from the evaluation of teaching performance, which as discussed in the next paragraph, may be a primary source of stress related to teaching. Other differences between the current study and that by Gmelch et al¹⁴ are that their respondents were from various academic fields and they did not attempt to place sources of stress specifically within the context of satisfaction.

The "requirements for promotion and tenure" subscale primarily addresses the issue of clarity. It is difficult and probably not prudent for an institution to define such

criteria too prescriptively (eg, number of publications) for autonomous scholars; however, mixed messages from department colleagues, chairs, and deans might have a deleterious impact on a faculty member's quality of work experience, which could in turn have negative implications for commitment and productivity, although further study is needed in this area. Discrepancies between what faculty members feel are important teaching and scholarship activities and what activities are given greater weight in promotion and tenure decisions were examined by Wolfgang, Gupchup, and Plake,⁴² who suggested that dissonance in expectations may impact satisfaction. Interestingly, "the procedures used to evaluate a faculty member's teaching effectiveness" item loaded onto the requirements for promotion and tenure rather than the teaching environment domain. This appears intuitive, as a faculty member's experience in teaching and interacting with students might be wholly different than the perception of how teaching effectiveness is measured, which might include other factors in addition to students' evaluation of teaching. As such, one domain examines satisfaction with fulfilling a role and the other examines the means by which effectiveness in that role is measured and rewarded. The "teaching environment" subscale contains an item eliciting satisfaction with the quality of students admitted into the professional program. This item and the "reputation" item from the support for scholarship scale are in unique domains; however, both domains address fulfillment of academic role functions. As such, the loading of such items is evidence of the importance that pharmacy faculty members place on taking pride in their work and in their employing institutions.

Graduate programs may be extraordinarily vital to scholarly productivity and may be critical resources in teaching, such as for conducting laboratories and recitations, in addition to grading papers and expanding the array of pedagogical strategies available to faculty members. At the same time, mentoring graduate students and teaching graduate courses are time consuming and can detract from time spent in other activities that some faculty members might prefer. Interestingly, these items loaded onto a unique domain, as opposed to the "resources for scholarship" or "teaching environment" domains, perhaps due to perceptions that the availability of competent graduate students might be more of an indication of the institution and its culture, and less within the control of chairs, deans, and other administrators.

The presence of a collegiality domain further evidences the momentous importance of intradepartmental relationships among faculty members.^{9,10} The coalescence of these items onto 1 subscale suggests that scholars perceive they could potentially be productive and enjoy their

work environment, independent of the amount of support they receive from institution. This has implications for hiring persons to comprise a department who complement one another socially and in their skill sets. Having collegial relationships with department members could serve to buffer dissatisfaction or stress accrued from other aspects of academic life; however, this warrants further study.

The current study utilized self-reported survey data and might not be a truly accurate representation of how the proposed items affect work satisfaction. The construction of items and thus their resultant loading into domains may be an artifact of language used in item construction; however, the use of a modified Delphi procedure with multiple iterations among faculty members from various disciplines may have served to minimize this phenomenon.

The results are limited to the population of respondents, especially given the survey's relatively low rate of return. The primary concern in regard to low response rates is the potential for nonresponse bias; however, nonresponse bias could persist with response rates of 60% or even higher.³⁴ E-mail survey response rates may be enhanced by using a mailed prenotification postcard; however, the cost-effectiveness of these procedures is inconclusive.^{43,44} The utility of e-mail prenotification and follow-up as performed in this study is not yet well established. Social and administrative science faculty members were overrepresented in the study and basic science faculty members were underrepresented and to that end, the resultant job satisfaction measure may have been impacted by unique experiences of social and administrative science and pharmacy practice faculty members or others with particularly strong feelings about their work environment or who are less skeptical of this type of research. Finally, the current study did not consider factors external to the immediate work environment (eg, home life, health, spiritual involvement) that could affect work satisfaction.

CONCLUSIONS

This research was undertaken to develop a comprehensive measure of pharmacy faculty member work satisfaction. Respondents' perceptions of work satisfaction were observed as a set of 6 domains: resources for scholarship, institutional support and reward, requirements for promotion and tenure, availability of a graduate program, collegiality, and teaching environment. Items comprising each domain can be used as scales to measure work satisfaction in unique areas. The overall measure exhibited very good construct validity, and each subscale exhibited very good internal consistency reliability.

Respondents reported higher levels of satisfaction with teaching environment and lower levels of satisfaction with the availability of competent teaching and research assistants and time to pursue scholarship. Future research may identify determinants of pharmacy academicians' work satisfaction.

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American Journal of Pharmaceutical Education 2007; 71 (4) Article 61.

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