

RESEARCH ARTICLES

Work Profiles Identified from the 2007 Pharmacist and Pharmaceutical Scientist Career Pathway Profile Survey

Jon C. Schommer, PhD,^a Lawrence M. Brown, PharmD, PhD,^b and Elliott M. Sogol, PhD^c

^aCollege of Pharmacy, University of Minnesota

^bCollege of Pharmacy, University of Tennessee Health Science Center

^cAmerican Pharmacists Association, Washington, DC

Submitted June 13, 2007; accepted August 27, 2007; published February 15, 2008.

Objectives. To investigate the underlying factor structure of respondents' work profiles that were created using the 48 items in the *Career Pathway Evaluation Program, 2007 Pharmacist and Pharmaceutical Scientist Profile Survey*, and use the resulting factors to describe the 26 different work categories listed in the survey.

Methods. Exploratory factor analysis was used to describe the underlying structures (factors) that best represented respondents' work profiles. Descriptive statistics and analysis of variance were used to describe the 26 different work categories listed in the survey.

Results. Ten underlying factors were identified for the respondents' work profiles. A description of these factors among the 26 different respondent categories revealed variation among the categories that can be useful for describing the career categories in the American Pharmacists Association Career Pathway Evaluation Program.

Conclusions. Variations in work settings among various pharmacy careers were identified. The profiles constructed in this study could be helpful to individuals as they consider various career paths and choose elective coursework or experiential sites during their pharmacy education.

Keywords: career, work profile, pharmacist, pharmaceutical scientist

INTRODUCTION

Many doctor of pharmacy graduates gain exposure to only a few of the career options that are available to them after graduation.¹⁻⁶ Such limited exposure of students to options that are available has been reported by medical and nursing professions as well.⁷⁻¹⁰ To help pharmacy students learn about various career options that might fit their interests and skills, the *Pathway Evaluation Program for Pharmacy Professionals* was developed by Glaxo Pharmaceuticals in the 1980s. This program allowed individuals to match their interests and skills with career profiles to help determine which career options might be most suitable for them.

The career profiles for the program were developed and updated through a series of surveys of respondents who worked in the career categories covered by the program. The initial *Glaxo Pharmacy Specialty Survey* was conducted in the fall of 1988. In an effort to keep the

information current, the *Glaxo Pharmacy Specialty Survey* was conducted again in the spring of 1993.¹¹

The American Pharmacists Association (APhA) conducted the *2002 Career Pathway Evaluation Program, Pharmacist Profile Survey* to update the career profiles. The APhA constructed the sampling frame using lists from various pharmacy organizations. The goal was to construct a sampling frame that represented pharmacists in each of the respondent categories used for the program. Findings from that survey were published in 2003.¹²⁻¹³

Using the 2002 survey as a template, the profile survey was repeated during spring 2007 and expanded to include more measurement items and both pharmacist and pharmaceutical scientist career pathways.¹⁴ (Copies of the *Career Pathway Evaluation Program - 2007 Pharmacist and Pharmaceutical Scientist Profile Survey* are available from the corresponding author upon request.)

The purpose of this study was to use a portion of the results from the *Career Pathway Evaluation Program - 2007 Pharmacist and Pharmaceutical Scientist Profile Survey* as a data source to (1) investigate the underlying factor structure of respondents' practice profiles that were created using the 48 items in the survey (available from

Corresponding Author: Jon C. Schommer, PhD, Professor, College of Pharmacy, University of Minnesota, 308 Harvard Street, S.E., Minneapolis, MN 55455. Phone: 612-626-9915. Fax: 612-625-9931. E-mail: schom010@tc.umn.edu

corresponding author upon request) and (2) use the resulting factors to describe the 26 different career pathways listed in the survey (Table 1).

METHODS

The data source used in this study was the results of the *Career Pathway Evaluation Program - 2007 Pharmacist and Pharmaceutical Scientist Profile Survey*. The survey instrument consisted of 5 sections that collected information about respondents' (1) primary work setting, (2) work setting profile, (3) workload and work activities, (4) background information, and (5) open-ended written opinions regarding career choices and about the survey instrument (available from the first author). Only data collected from section 2 on work setting profiles were

used for this study. This section contained 48 items. Respondents rated on a 10-point scale the degree to which each item described their work setting (eg, time spent performing physical assessments, conducting research, or managing business operations). The items included on the survey instrument were selected by an expert panel so that the work settings described would represent a broad range of career categories. In addition, the items selected covered a number of facets of the work setting. For example, in addition to time spent on various activities, items about the benefits offered/available were also included (eg, job sharing, parental leave, etc.) This allowed for variation that was necessary for creating career profiles within the Career Pathway program.

For the 2007 survey, a web-based data collection technique was utilized, with Formsite.com serving as the host site for the survey. Through a purposive sampling process, individuals who would likely fit one of the 26 career categories (Table 1) in the survey were identified as potential respondents by an expert panel that convened on a weekly basis via conference call to identify and invite individuals to participate. Both individual (eg, personal e-mails) and broadcast (eg, newsletters) invitations were used for recruiting survey respondents. Invitations were made from February 2007 through April 2007.

Completed survey forms (N = 1,347) were downloaded from the host site on May 14, 2007. All of these forms were deemed complete and usable and represented 26 different career categories (Table 1). Based on sample size requirements for estimating analysis of variance statistics, our goal was to have at least 14 respondents in each of the 26 categories. Only one category did not meet this goal (category 25: Pharmacy Law/Public Policy), with only 9 responses in that category.

For the first study objective, exploratory factor analysis was used to investigate the underlying factor structure of respondents' work profiles that were created using the 48 items in the survey. Factor analysis helps one understand the structure of a correlation matrix. It helps categorize a relatively large number of variables into a few overall factors. In this study, varimax rotation was used for factor analysis to maintain orthogonality of factors and to minimize the number of variables that had high loadings on a factor. Only factors with eigenvalues greater than 1 were included in the factor solution. In addition, only items with factor loadings with absolute values greater than 0.40 on one and only one factor were included for identifying factors.

Scores for the overall factors were computed by summing the scores of the items that loaded on the corresponding factor. Each factor was assigned a name based upon the items that comprised that particular construct.

Table 1. Respondent Categories and Number of Usable Responses Identified From the *Career Pathway Evaluation Program, 2007 Pharmacist and Pharmaceutical Scientist Profile Survey* (N = 1347)

Category	No. (%)
1. Academia - Clinical Practice	134 (9.9)
2. Academia - Economic and Administrative Sciences	64 (4.8)
3. Academia - Pharmaceutical Sciences	25 (1.9)
4. Association Management	40 (3.0)
5. Chain Community Pharmacy (4 or more stores)	98 (7.3)
6. Clinical Specialist	124 (9.2)
7. Community Health Center	53 (3.9)
8. Compounding Pharmacy	30 (2.2)
9. Contract Research Organization	23 (1.7)
10. Corporate Management	21 (1.6)
11. Government/Federal Pharmacy (e.g. military public health service)	102 (7.6)
12. Home Health Care Pharmacy	53 (3.9)
13. Hospital Pharmacy	140 (10.4)
14. Independent Community Pharmacy (<4 stores)	44 (3.3)
15. Long Term Care/Geriatric Pharmacy	33 (2.4)
16. Mail Service Pharmacy	58 (4.3)
17. Managed Care Outpatient Pharmacy	19 (1.4)
18. Medical Communications/Drug Information	19 (1.4)
19. Nuclear Pharmacy	112 (8.3)
20. Office-Based Pharmaceutical Care	14 (1.0)
21. Pharmaceutical Industry - Medical Liaison	24 (1.8)
22. Pharmaceutical Industry - Research and Development	28 (2.1)
23. Pharmaceutical Industry - Sales and Marketing	15 (1.1)
24. Pharmacy Benefit Management	31 (2.3)
25. Pharmacy Law/Public Policy	9 (0.7)
26. Other	34 (2.5)

Means, standard deviations, and measure reliability (Cronbach coefficient alpha) were computed for each factor.

For the second study objective, mean scores for the resulting factors were used to describe the 26 different career pathways listed in the survey. Analysis of variance was used to ascertain that mean scores for the factors differed significantly among the 26 career categories.

RESULTS

Table 2 shows that 41 out of the 48 items in this study met our factor analysis criteria (loaded on a factor with an eigenvalue greater than 1, exhibited a factor loading with an absolute value greater than 0.40, and loaded on one and only one factor). The 7 items that were dropped from analysis loaded on more than one factor (items 7, 12, 26, and 42) or did not have a factor loading greater than 0.40 on any of the 10 resulting factors (items 30, 40, and 44). Each factor was assigned a name based on the items that comprised that particular construct (Table 2).

Table 3 summarizes the 10 factors (constructs) identified. Based on per-item means, the 3 highest scores for the overall group of respondents were for security (8.2), stress (7.2), and self-actualization (6.9). The 3 lowest scores were for dynamic work schedule (3.9), patient care (4.0), and research (4.6). Table 4 provides a description of per-item mean scores for each of the 10 identified factors among the 26 respondent categories. Analysis of variance showed that, for each factor, there were significant differences in scores among respondent categories ($p < 0.001$).

The highest 3 scores in each column are highlighted in Table 4. To describe the 26 respondent categories, we assumed that these highly scored factors were the most representative of each respective respondent category. The respondent categories that scored highest on patient care were office-based pharmaceutical care (7.3), independent pharmacy (5.8), and clinical specialist (5.7). For application of knowledge, highest scoring respondent categories were pharmaceutical industry – medical liaison (8.5), office-based pharmaceutical care (7.9), and clinical specialist (7.8).

The highest scores for self-actualization were reported by association management (8.3), academia – economic and administrative sciences (8.1), and academia – pharmaceutical sciences (8.0). For research, the highest scores were reported by academia – economic and administrative sciences (7.5), academia – pharmaceutical sciences (7.1), and pharmaceutical industry – research and development (6.9).

Managerial responsibility scores were highest for nuclear pharmacy (7.0), home health care (6.9), and independent pharmacy (6.3) respondents. Flexibility of

Table 2. Factor Analysis Results

Item ^a	
Factor 1: Patient Care	
Interaction with people (item 1)	0.83
Conducting physical assessments (item 2)	0.67
Interpreting laboratory values (item 3)	0.45
Continuity of client relationships (item 4)	0.62
Helping people (item 5)	0.73
Factor 2: Application of Knowledge	
Collaboration with other professionals (item 6)	0.72
Focus of expertise (item 11)	0.44
Applying scientific knowledge (item 13)	0.57
Applying medical knowledge (item 14)	0.64
Factor 3: Self-Actualization	
Variety of daily activities (item 8)	0.50
Opportunities for leadership development (item 27)	0.69
Community prestige (item 28)	0.62
Professional involvement (item 29)	0.65
Autonomy (item 33)	0.64
Self-worth (item 34)	0.78
Future focus (item 35)	0.73
Professional prestige (item 36)	0.75
Unique work environment (item 37)	0.41
Entrepreneurial opportunity (item 39)	0.42
Factor 4: Research	
Problem solving (item 10)	0.45
Creating new knowledge by conducting res (item 15)	0.64
Advanced degree (item 38)	0.51
Writing (item 43)	0.69
Verbal presentations (item 48)	0.68
Factor 5: Managerial Responsibility	
Personnel management (item 16)	0.79
Business management (item 17)	0.84
Continuity of co-worker relationships (item 41)	0.44
On call (item 45)	0.41
Factor 6: Flexibility of Work	
Part-time opportunities (item 20)	0.79
Job sharing (item 21)	0.77
Exit and re-entry into workforce (item 22)	0.70
Parental leave opportunities (item 23)	0.45
Factor 7: Dynamic Work Schedule	
Regular work schedule (item 19)	-0.40 ^b
Free time for leisure/family activities (item 24)	-0.44 ^b
Work on holidays (item 46)	0.81
Work on weekends (item 47)	0.81
Factor 8: Security	
Job security (item 25)	0.60
Benefits (vacation, health, retirement) (item 31)	0.64

(Continued on next page)

Table 2. Continued

Item ^a	
Factor 9: Stress	
multiple task handling (item 9)	0.74
pressure/stress (item 18)	0.66
Factor 10: Geographic Location	
Geographic location (item 32)	0.72

^aItems with factor loadings with absolute values greater than 0.40 on one and only one factor were retained for the factors outlined in this table

^bNegative signs resulted due to the wording of these items and response categories which were in the opposite direction compared to other items. For subsequent analysis, these items were reverse coded. Some items were dropped from analysis due to poor factor loading characteristics. Complete list is available from the first author

work scores were highest for chain pharmacy (6.4), medical communications/drug information (5.9), and contract research organization (5.8) respondents. Scores for dynamic work schedule were highest for nuclear pharmacy (5.1), chain pharmacy (5.0), and hospital pharmacy (4.6).

For the factor security, highest scores were reported by respondents categorized as government / federal pharmacy (8.9), academia – economic and administrative sciences (8.7), and association management (8.6). Stress scores were highest for pharmaceutical industry – sales and marketing (8.5), pharmacy law/public policy (8.4), and chain pharmacy (8.1). Geographic location scores were highest for pharmaceutical sciences – medical liaison (9.0), medical communications/drug information (8.3), and nuclear pharmacy (8.1) categories.

DISCUSSION

The results of this study provide insight about the underlying factor structure of the 48 items in the *Career*

Pathway Evaluation Program – 2007 Pharmacist and Pharmaceutical Scientist Profile Survey. The 41 items that met our analysis criteria were grouped into 10 factors (patient care, application of knowledge, self-actualization, research, managerial responsibility, flexibility of work, dynamic work schedule, security, stress, and geographic location). Table 5 compares the 6 factors identified in the 2002 survey¹² with the 10 factors identified in the 2007 survey. We believe that the 2007 findings are an improvement over the 2002 survey findings in that more factors for more career paths were identified and described.

The profiles constructed in this study could be helpful to individuals as they consider various career paths and choose elective coursework during their pharmacy education. For example, if a student pharmacist is interested in careers offering opportunities for patient care, findings in Table 4 show that careers in office-based pharmaceutical care, independent pharmacy, and clinical specialist areas scored highest for patient care. On the other hand, career pathways that scored highest for self-actualization were association management, academia-economic and administrative sciences, and academia-pharmaceutical sciences.

Also, the results might be useful for educators who advise student pharmacists about various career options. For example, the findings in Table 4 could help match student interests with elective courses, experiential learning rotations, and participation in research. In addition, the results could be used to identify new elective courses or practice experiences that might be needed for comprehensive and relevant pharmacy education. One of the reasons for updating the profile periodically for the Career Pathway program comes from acknowledging that not only do career opportunities change, but also that student pharmacists' priorities and desires for career pathways

Table 3. Construct (10 Factor) Summaries

Construct Label	No. of Items	Per-Item Mean	Mean (SD)	Range	Cronbach Coefficient Alpha
Factor 1: Patient Care	5	4.0	20.2 (9.9)	5-50	0.77
Factor 2: Application of Knowledge	4	6.5	26.1 (7.1)	4-40	0.68
Factor 3: Self-Actualization	10	6.9	68.6 (17.3)	11-100	0.88
Factor 4: Research	5	4.6	22.8 (9.7)	5-47	0.76
Factor 5: Managerial Responsibility	4	5.2	20.8 (7.7)	4-40	0.63
Factor 6: Flexibility of Work	4	5.0	19.9 (8.7)	4-40	0.68
Factor 7: Dynamic Work Schedule	4	3.9	15.5 (7.7)	4-40	0.67
Factor 8: Security	2	8.2	16.5 (3.1)	2-20	0.35 ^a
Factor 9: Stress	2	7.2	14.4 (3.8)	3-20	0.37 ^a
Factor 10: Geographic Location	1	6.8	6.8 (3.2)	1-10	n/a

^aPearson correlation coefficient is reported rather than Cronbach Coefficient Alpha for this two-item construct. Pearson correlation was significant (p < 0.001)

Table 4. Descriptions of Respondent Work Categories (Per-Item Mean Scores^{a,b,c})

Respondent Category	Patient Care (5 items)	Application of Knowledge (4 items)	Self-Actualization (10 items)	Research (5 items)	Managerial Responsibility (4 items)	Flexibility of Work (4 items)	Dynamic Work			Geographic Location (1 item)
							Schedule (4 items)	Security (2 items)	Stress (2 items)	
Academia – Clinical Practice	4.9	7.1	7.9	5.6	4.7	4.7	3.7	8.6	7.6	6.9
Academia – Economic and Administrative Sciences	2.2	6.2	8.1	7.5	4.4	4.6	4.0	8.7	7.3	7.2
Academia – Pharmaceutical Sciences	2.9	7.0	8.0	7.1	4.6	3.4	4.4	8.5	8.0	6.6
Association Management	2.5	5.0	8.3	5.4	6.0	4.9	3.8	8.6	8.1	5.1
Chain Pharmacy	4.4	4.3	5.0	2.5	4.8	6.4	5.0	8.3	8.1	7.3
Clinical Specialist	5.7	7.8	6.9	4.6	4.7	4.8	3.7	8.3	7.2	6.5
Community Health Center	5.6	6.6	6.9	3.7	6.0	5.0	2.3	8.3	6.7	6.2
Compounding Pharmacy	4.9	6.6	6.6	3.6	5.2	4.7	3.9	7.8	6.3	6.1
Contract Research Organization	2.4	6.4	7.4	6.2	4.6	5.8	3.2	7.4	6.4	6.4
Corporate Management	2.6	5.9	7.8	5.5	6.2	5.7	2.9	8.3	7.8	6.8
Govt/Federal Pharmacy	3.9	6.4	7.0	4.6	5.3	3.9	2.9	8.9	6.9	7.9
Home Health Care	5.4	7.2	7.1	3.8	6.9	5.5	3.9	8.0	7.4	7.7
Hospital Pharmacy	3.9	6.8	6.0	3.9	5.1	5.1	4.6	7.9	7.5	6.6
Independent Pharmacy	5.8	5.4	7.5	3.2	6.3	5.6	3.7	7.7	7.3	6.1
Long Term Care/Geriatric Pharmacy	4.3	6.5	6.6	4.2	4.8	5.2	4.3	7.2	6.7	7.7
Mail Service Pharmacy	3.9	5.1	4.9	3.2	4.0	3.9	4.0	7.9	5.5	5.1
Managed Care Outpatient Pharmacy	3.3	5.9	5.5	3.7	3.6	3.8	3.2	7.8	6.1	6.2
Medical Communications/Drug Info	2.5	7.2	7.4	5.6	4.1	5.9	2.4	7.9	6.4	8.3
Nuclear Pharmacy	3.0	7.0	6.6	3.3	7.0	5.2	5.1	8.6	6.5	8.1
Office-Based Pharmaceutical Care	7.3	7.9	7.6	4.8	5.1	5.1	3.0	7.8	7.5	5.4
Pharma – Medical Liaison	2.7	8.5	7.4	6.5	4.2	4.4	3.6	8.0	7.1	9.0
Pharma – Research and Development	2.5	7.4	7.6	6.9	5.3	5.1	2.8	7.9	7.7	4.5
Pharma – Sales and Marketing	2.3	6.4	7.8	6.0	5.2	4.1	4.1	8.6	8.5	5.8
Pharmacy Benefit Management	2.9	6.1	6.9	5.5	5.6	5.2	3.3	8.2	6.7	6.5
Pharmacy Law/Public Policy	3.3	6.4	7.9	5.4	5.1	5.3	3.3	7.8	8.4	6.7
Other	3.2	6.6	7.3	5.5	4.7	5.5	3.7	7.8	7.5	6.5
Overall	4.0	6.5	6.9	4.6	5.2	5.0	3.9	8.2	7.2	6.8

^aHighest 3 scores in each column are highlighted in bold lettering

^bItems were rated from 1 to 10, with 10 representing the “highest” level of the work characteristic that the item described. Items 19 and 24 were reverse coded so that they would be directionally similar to the other items in their construct (Dynamic Work Schedule)

^cp < 0.001 for all factors

Table 5. Comparison of Factors Identified in 2002 and 2007 Studies

Construct label	No. of Items	Per-Item Mean
2002		
Non-Salary Compensation	4	7.2
Workload	3	6.7
Future Innovation and Job Fulfillment	12	6.5
Freedom	2	5.7
Relational	3	5.2
Translating Knowledge to Pharmacy Practice	7	4.7
2007		
Security	2	8.2
Stress	2	7.2
Self-Actualization	10	6.9
Geographic Location	1	6.8
Application of Knowledge	4	6.5
Managerial Responsibility	4	5.2
Flexibility of Work	4	5.0
Research	5	4.6
Patient Care	5	4.0
Dynamic Work Schedule	4	3.9

change. The findings from this research can be used as another piece of information for evaluating and developing curricula for pharmacy education to help meet those changing needs.

The 10 factors we identified could be associated with quality of work life, job stress, job satisfaction, career commitment, and job turnover intention.¹⁵⁻²⁰ Although we did not study causal relationships in this study, the *Career Pathway Evaluation Program* contains descriptive items that would be useful to pharmacists and pharmaceutical scientists who wish to learn more about factors that impact the quality of their work life.

The findings also provide insight for future research in this area, particularly the next *Career Pathway Evaluation Program* Profile Survey. We suggest that the 10 factors we identified could serve as useful categories for the Career Pathway Evaluation Program and that future surveys should include more items related to factors that currently have relatively few items describing them (security, stress, geographic location).

This study had several limitations. First, non-coverage bias could exist. While great effort was devoted to identifying pharmacists and pharmaceutical scientists for the career categories in this study, the lists we developed were neither mutually exclusive nor exhaustive. Second, there were relatively small sample sizes for some career categories. Based on sample sizes needed for

conducting analysis of variance, we suggest that results for career categories with fewer than 14 responses should be viewed with great caution. Third, due to sample size limitations, it was not prudent to further categorize respondents by demographic variables such as gender, position, or years of experience. Future work could investigate how such demographic variables could affect the results. Fourth, respondents to this survey were identified and recruited using purposive sampling techniques (non-random). Therefore, results should not be used for making population estimates. Rather, our goal was to differentiate among the various career pathways we described. Fifth, the 48 items used for developing work profiles might not be an exhaustive list. However, the items provided information for describing pharmacist and pharmaceutical scientist work profiles and various career options that were open to college of pharmacy graduates in 2007. Finally, our findings are descriptive only. They cannot be used to answer questions about “why” career pathways differ.

CONCLUSION

These findings provide insight about the underlying factor structure of pharmacist and pharmaceutical scientist careers in 2007 and various career paths that were open to college of pharmacy graduates in 2007. We identified 10 underlying factors for the pharmacist and pharmaceutical scientist profiles. Future research that investigates how representative these 10 factors and the underlying measurement items are to individuals who are seeking career guidance would be helpful.

ACKNOWLEDGMENTS

Funding for this study was provided by the American Pharmacists Association. The authors gratefully acknowledge Anne Burns, Elizabeth Cardello, Shelby Englert, and Cecilia Plaza for serving on an expert advisory panel for this survey.

REFERENCES

1. McPherson ML. Career awareness roundtable. *J Am Pharm Assoc.* 2000;40(Suppl):S54-5.
2. Chisholm MA, Cobb H. Work experience and career goals as determinants of pharmacy degree pursued. *Am J Health-Sys Pharm.* 1996;53:305-7.
3. Baran RW, Shaw J, Crumlish K. Pharmacy student expectations for professional practice. *Managed Care Interface.* 1998;50-5.
4. Walker SE, Schafermeyer KW, Rickert DR, Hurd PD. Opportunities for pharmacists as managers: perceptions of senior executives in the pharmaceutical industry. *J Am Pharm Assoc.* 1999;39:41-4.
5. Penna RP. Creating Your Future. *Am J Hosp Pharm.* 1994;51:2714-17.

American Journal of Pharmaceutical Education 2008; 72 (1) Article 02.

6. Besier JL, Jang R. Factors affecting practice-area choices by pharmacy students in the Midwest. *Am J Hosp Pharm.* 1992;49:598-602.
7. Paller MS, Becker T, Cantor B, Freeman SL. Introducing residents to a career in management: the physician management pathway. *Acad Med.* 2000;75:761-4.
8. Basco WT, Reigart JR. When do medical students identify career-influencing physician role models? *Acad Med.* 2001;76:380-2.
9. Kenkre JE, Foxcroft DR. Career pathways in research: pharmaceutical. *Nurs Stand.* 2001;16:36-9.
10. Robinson S, Murrells T, Marsland L. Constructing career pathways in nursing: some issues for research and policy. *J Adv Nursing.* 1997;25:602-14.
11. *Glaxo Wellcome Inc. Pathway Evaluation Program for Pharmacy Professionals*, 4th Edition. Research Triangle Park, NC: Glaxo Wellcome: 1996.
12. Schommer JC, Brown LM, Millonig MK, Sogol EM. Career pathways evaluation program: 2002 pharmacist profile survey. *Am J Pharm Educ.* 2003;67:Article 5.
13. Brown LM, Millonig MK, Rothholz M, Schommer JC, Sogol EM. Career pathways for pharmacists. *J Am Pharm Assoc.* 2003;43:459-562.
14. Schommer JC, Sogol EM, Brown LM. Career pathways for pharmacists. *J Am Pharm Assoc.* 2007;47:563-4.
15. Gaither CA. Career Commitment: A mediator of the effects of job stress on pharmacists' work-related attitudes. *J Am Pharm Assoc.* 1999;39:353-61.
16. McHugh PP. Pharmacists' attitudes regarding quality of worklife. *J Am Pharm Assoc.* 1999;39:667-76.
17. Kreling DH, Doucette WR, Mott DA, Gaither CA, Pedersen CA, Schommer JC. Community pharmacists' work environments: evidence from the 2004 national pharmacist workforce study. *J Am Pharm Assoc.* 2006;46:331-9.
18. Schommer JC, Pedersen CA, Gaither CA, Doucette WR, Kreling DH, Mott DA. Pharmacists' time in work activities (desired, actual, and gaps): evidence from the 2004 national pharmacist workforce study. *J Am Pharm Assoc.* 2006;46:340-7.
19. Gaither CA, Nadkarni A, Mott DA, Schommer JC, Doucette WR, Kreling DH, Pedersen CA. Should I stay or should I go? The influence of individual and organizational factors on pharmacists' future work plans. *J Am Pharm Assoc.* 2007;47:165-73.
20. Gaither C, Kafeleh AA, Doucette WR, Mott DA, Pedersen CA, Schommer JC. A modified model of pharmacists' job stress: the role of organizational, extra-role and individual factors on work related outcomes. *Res Soc Admin Pharm.* 2008:in press.