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INSTRUCTIONAL DESIGN AND ASSESSMENT

The 4-Year Evolution of a Social and Behavioral Pharmacy Course

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Objective. To evaluate the impact of 3 sequential course revisions on student performance in and perceived value of a social science-based course.

Design. The initial revision emphasized study of the primary literature and traditional assessments of student learning. Subsequent course revisions emphasized active learning and reflective assessment methodologies.

Assessment. The syllabi, grade distributions, and course evaluations were collected at baseline and after each revision and compared. Student performance in and their perceived value of the course declined after the initial course revision, but significantly improved after subsequent revisions with performance measures returning to baseline.

Conclusion. Positioning social science-based courses as a bridge to practice while using active-learning techniques to deliver content had a positive impact on students' perceived value of this Social and Behavioral Pharmacy course without compromising performance measures.

Keywords: social and behavioral pharmacy, social science, assessment

INTRODUCTION

The provision of direct patient care has become a priority for the profession of pharmacy. Most doctor of pharmacy (PharmD) curricula revolve around educating pharmacy students to deliver direct patient care. While this has been the focus of colleges and schools of pharmacy for many years, it was only in 2006 that the American College of Clinical Pharmacy (ACCP) proposed the following definition: "Direct patient care practice involves the pharmacist's direct observation of the patient and his/her contributions to the selection, modification, and monitoring of patient-specific drug therapy. This is often accomplished within an interprofessional team or through collaborative practice with another healthcare provider."[1]

The first sentence of ACCP's definition helps explain the reason that most PharmD curricula are dominated by the basic and clinical sciences. The second sentence, however, highlights an important aspect of pharmacy education that, at times, may appear to be neglected: social and behavioral pharmacy. For pharmacists, who lack independent authority to implement drug therapy changes, impacting patient outcomes requires emotional intelligence, communication skills, and the ability to listen, negotiate, compromise, and exert influence across disciplinary boundaries and power gradients. Additionally, to choose effective drug regimens and persuade patients to incorporate these regimens into their own process of self-regulation, pharmacists must understand the experience of illness and treatment from the patient's perspective.[2] They must overcome low health literacy,[3-5] navigate cultural differences,[6] and negotiate many forms of nonadherence.[7,8] Pharmacists have an opportunity to impact patients' lives and improve the healthcare system through care coordination,[9] behavior change,[10-11] and the prevention of medication errors and prescription drug abuse.[12,13] The basic and clinical sciences provide a critical scientific foundation for direct patient care; however, without a practical mastery of the relevant principles of modern social and behavioral science, pharmacists are likely to flounder in the face of social and behavioral challenges such as these.

Pharmacy education and practice must require greater mastery of social and behavioral science. Following the Institute of Medicine's call to transform healthcare delivery along team-based lines, interprofessional education and collaborative practice are projected to define future health professions education and health-systems practice, respectively.[14-16] Additionally, the shift from a product- to a patient-focused practice in the community setting continues to progress.[17-19] In 2012, for example, Walgreens

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Company introduced a new business model and accompanying store design, removing many of its pharmacists from drug product assembly and stationing them in front of the pharmacy counter, in direct contact with consumers. By 2015, nearly half of its stores are expected to undergo this transformation. The relationship between pharmacists and their customers will become its new product.

If current trends continue, opportunities for traditional, product-focused practice will become more limited over time. Pharmacists who wish to provide direct patient care successfully will need to be knowledgeable about the psychological and sociological forces influencing patients and other healthcare professionals and the associated interconnections. Given that pharmacy education is aligned primarily around preparing students to provide direct patient care, the time has come to revisit the balance between social and behavioral science courses and those of other disciplines within PharmD curricula. This step will require convincing both curriculum decision makers and pharmacy students of the value, relevance, and practical utility of social and behavioral science. Over a 4-year period, the authors (one a former student in this course and another the primary course coordinator) collaborated to do just this, attempting through sequential course revisions to improve a social science-based course at the University of Illinois at Chicago College of Pharmacy. While a pharmacy student in this course, the first author, a former high school psychology and sociology teacher, noted his fellow students' lack of appreciation for the course's value to their pharmacy career and subsequently agreed to assist the primary course coordinator with revising the course. This paper describes the evolution of the course over a 4-year period and reports the outcomes achieved.

DESIGN

Social and Behavioral Pharmacy was a 2-credit-hour, core curriculum course taught in the spring semester of the second year of the PharmD program. Taught by the Department of Pharmacy Systems, Outcomes, and Policy (formerly Pharmacy Administration), the course was devoted to teaching social and behavioral concepts and theories as underpinnings of pharmacy practice. Social science theories, models, and methods were taught to help students learn and be knowledgeable about the psychological and sociological aspects of behavior as they related to illness, medications, decision-making, motivation, behavior change, and interpersonal skills. The ultimate goal was for students to translate this knowledge into clinically relevant interpersonal, problem-solving, and critical-thinking skills, and to develop empathy for and insight into the experience of illness – especially chronic illness - from the patient's point of view. Development of these skills was intended to prepare pharmacists to address many of the challenges presented above and to develop relationships with patients and other healthcare professionals that are characterized by mutual understanding, trust, and respect. These relationships could then be leveraged to exert additional positive influence on the medication use process.

The majority of students reported on course evaluations that some or most of the course content was valuable prior to the course revisions. Year after year, however, students also shared on course evaluations and in discussions with the course coordinator their perception that course content was not relevant to their future careers as pharmacists. This was typified by negative comparisons to the "hard science" counterparts within the curriculum. Over a 4-year period, the course coordinators revised the course content and teaching methods to improve students' perception of the course's relevance. Some of the methods implemented included having an alumni panel address the relevance of course content and increasing the number of quizzes administered on assigned reading material as part of the first revision; decreasing the number of required readings and quizzes and increasing the number of reflective assignments as part of the second revision; and expanding the panel discussion to a series of discussions that included patients and interprofessional experts as well as alumni as part of the third revision.

EVALUATION AND ASSESSMENT

The syllabus, grade distribution, and student evaluations for Social and Behavioral Pharmacy were collected for the year prior to the first course revision (baseline) and for each of the 3 sequential course revisions. Syllabi changes (with rationale) and grade distributions were documented in detail for each year. Course evaluations at the University of Illinois at Chicago College of Pharmacy ask students to rate various statements using a 5-point Likert-type scale on which 1=almost never, 2=rarely, 3=sometimes, 4=often, and 5=almost always. Students also had the option to select "not applicable." Response rates and mean scores for common questions from year to year were documented. Mann-Whitney U tests with pairwise comparisons to baseline scores were performed. Two-tailed p values were used to evaluate changes in responses to common questions from baseline (ie, to evaluate the impact of course revisions). A Bonferroni correction for multiple tests, which set *alpha* for significance at ≤ 0.003, was performed. Qualitative content analysis techniques were used to characterize students' written responses to open-ended questions on the course evaluations. The investigators evaluated outcomes from

each revision to generate objectives and detailed course modifications for each subsequent revision. The University of Illinois at Chicago Office for the Protection of Research Subjects approved this research project.

Course at Baseline (2009)

Description. Four categories broadly defined course content in 2009, prior to revising the course: illness (eg, the sick role; the trajectory model of chronic illness; body, self, and biography in chronic illness), medications (eg, the meaning of medications; medication errors, and patient safety), healthcare-associated behavior (eg, theory of reasoned action/theory of planned behavior; transtheoretical model; physicians' decision-making about prescription drugs; patient involvement in decision-making), and social interactions (eg, pharmacist-physician interactions). Topics were addressed in weekly 2-hour lectures coupled with required reading assignments. Student assessment consisted of 2 quizzes (25%), 2 written assignments (25%), a midterm examination, and a final examination (25% each). Students also had an opportunity to earn up to 4 percentage points in extra credit.

Outcomes. Eighty-three percent (133/160) of enrolled students completed the formal course evaluation. Nineteen percent of respondents reported that they "often" found the course to be valuable, while 37% reported that they "almost always" did (Figure 1). Eighty-three percent of students responded positively ("often" or "almost always") when questioned whether stated course objectives aligned with what was actually taught. The proportion of positive responses for whether examination questions adequately reflected weighting of course topics and how responsive the course coordinator was to students' comments/feedback was 73% and 69%, respectively (Table 1).

Informal student feedback (eg, impromptu discussions with students outside of class) was largely negative. Many students referred to the course euphemistically as "Feelings." Others expressed their belief that it was irrelevant to their future and complained that it distracted from what they believed were more important courses within the curriculum. Formally, students were given the opportunity to provide written feedback on instruction provided. Fifty-three percent (71/133) of students provided written responses to the question "what aspects of the instructor's teaching do you find most helpful to your learning." Forty-two percent (30/71) of these responses cited instructor provision of examples linking course material to "real life," whereas 39% (28/71) listed the lecture style of the instructor. Forty-seven percent (62/133) of students responded to the question, "What aspects of the instructor's teaching do you find least helpful to your learning?" Of these, 32% (20/62) thought the lectures lacked focus, and 8% (5/62) cited rote memorization and required readings as least helpful. The average final grade for the course was 91% (range: 71%-103%). Sixty-six percent of students earned a letter grade of "A," 31% "B," and 3% "C."

Course Revision 1 (2010)

Objectives. The primary aim for the revisions made in 2010 was to increase the perceived relevance of the course to contemporary pharmacy practice. Secondary aims included: (1) aligning assessments with the stated "major requirement" of the course, which was to read the assigned material, and (2) increasing the number of active-learning exercises as a means of facilitating more

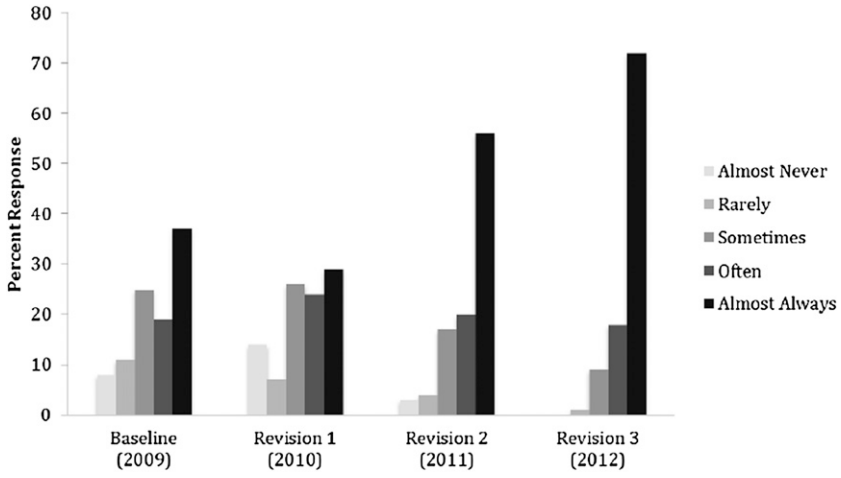

Figure 1. Students' responses over time to the 5-point Likert-type course evaluation question "Overall, I found this course to be valuable."

Table 1. Students' Mean Responses to 5-Point Likert-Type Course Evaluation Questions[a]

Question	2009	2010	2011	2012
Overall, I found this course to be valuable.	3.7	3.5	4.2[b]	4.6[c]
There was agreement between the stated course objectives and what was actually taught.	4.5	4.1	4.5	4.8
Examination questions adequately reflected the weighting of the course topics.	4.1	3.4[d]	4.3	—[e]
The course coordinator was responsive to students' comments and feedback.	4.1	4.0	4.7[c]	4.8[c]
Grading throughout the course was fair and consistent.	—[f]	4.0	4.5	4.8[c]
The course readings were helpful to my learning.	—[f]	3.4	4.3[c]	4.5[c]
The clinical and scientific disciplines represented in this course were effectively integrated.	—[f]	3.8	4.3	4.6[c]

[a] Rating scale: 1=almost never, 2=rarely, 3=sometimes, 4=often, 5=almost always
[b] $p=0.001$
[c] $p<0.001$
[d] $p=0.003$
[e] The 2012 mean score for this question was not evaluated because traditional examination questions were not administered.
[f] This question was added to the course evaluation in 2010; therefore, the mean score reported for 2010 serves as baseline for comparative purposes.

in-class participation and reinforcing the relevance of the course to pharmacy practice.

Revisions. The authors implemented several changes to achieve these goals. The first involved inviting respected faculty members from the Department of Pharmacy Practice, who were also alumni of the college, to participate in a panel discussion. On the first day of the course, the alumni panel shared their insights about the value of the course and linked course material to their professional experiences and direct patient care. Additionally, a series of 7 quizzes based exclusively on assigned reading material replaced the 2 lecture-based quizzes and 1 midterm examination. One written assignment was eliminated and the final examination was retained. Finally, 3 in-class written reflections were introduced. For this exercise, students were given time at the end of class to reflect on learned material and identify material needing clarification. They were also given an opportunity to address concerns identified during their reflections at the start of the next class session. The weighting of grades was shifted to place a greater emphasis on assigned reading material: 7 quizzes (50%), 1 written assignment (20%), 3 reflections (5%), and a final examination (25%). Opportunities for extra credit were eliminated.

Outcomes. Twenty-eight percent (45/161) of students completed the formal course evaluation. Students' overall perceived value of the course declined (Figure 1). As Table 1 demonstrates, this difference was not significant. Eighty-two percent of students responded positively when questioned whether there was agreement between stated course objectives and what was actually taught, a finding that was nearly identical to that of the previous year. A non-significant decline in mean scores was noted for this question. A more precipitous decline was noted for whether examination questions adequately reflected weighting of course topics, with a 50% drop in positive responses and a significant mean score change. There was no observed change in students' responses to whether the course coordinator responded to students' comments/feedback. The final three questions in Table 1 were added to the course evaluation in 2010. The percentages of positive responses to these new statements were 65%, 42%, and 65%, respectively.

Informal student feedback was overwhelmingly negative after the first revision. Students criticized the 7 quizzes that they felt were based exclusively on lengthy and highly theoretical primary literature readings and unreasonable in expectation for a 2-credit-hour course. Many volunteered that they did not do the readings after the first week or 2 because the cost (ie, lost time to prepare for other courses) outweighed the benefit (ie, a few points on a quiz). Several students reported that they valued the alumni panel at the beginning of the semester, while others found it to be self-serving. Formal course evaluation questions were modified in 2010. Students were asked to share what they thought was most beneficial about the course as well as what they considered most difficult. To the former, 36% (16/45) of respondents provided feedback, 44% (7/16) of whom cited the lecture style of the instructor as beneficial. Thirty-eight percent (17/45) of respondents shared what they thought was difficult about the course, 65% (11/17) of whom cited readings/quizzes. Thus, the amount of reading-based quizzes, their theoretical nature, and the 50% grade weighting assigned to them emerged as negative themes. The average final grade for the course was 82% (range: 73%-98%), a 9% decrease from the previous course offering. Twenty-one percent of students earned a letter grade of "A," 62% "B," and 17% "C." One student failed.

Course Revision 2 (2011)

Objectives. The changes implemented in 2010 directly undermined the primary aim of revising the course. Specifically, by increasing student workload and tying course performance to understanding of theory-based readings, which were changes implemented at least partially to emphasize their importance in relation to other courses within the curriculum, evaluations of the course worsened instead of improving. A comparison with other 2-credit-hour courses within the PharmD curriculum supported students' contention that the first revision of Social and Behavioral Pharmacy demanded a disproportionate amount of work and time. Based on this analysis, several aims were developed for the second course revision, the primary being greater emphasis on class attendance and participation. Secondary aims included: (1) streamlining required readings and ensuring their direct applicability to pharmacy practice, (2) ensuring student workload was appropriate for a 2-credit-hour course, and (3) retaining successful elements of the first course revision.

Revisions. Several changes were implemented to achieve these goals. First, the number of required readings was decreased from 25 to 10 (ie, a 67% reduction in number of pages). Retained readings were chosen based on their direct applicability to pharmacy practice (ie, theory-based readings were eliminated). The number of reading-based quizzes was also decreased from 7 to 2. Next, the number of in-class written reflections was increased from 3 to 15. A more systematic approach was implemented to analyze these reflections and increase their usefulness/impact. Specifically, a teaching assistant was tasked with identifying and presenting themes to the course coordinator. These themes were then used at the start of the next class session to guide and engage students in a 10- to 15-minute class discussion. The written assignment and final examination were retained. Grade distribution was modified to emphasize predetermined goals: reflections (30%), quizzes (25%), written assignment (20%), and a final examination (25%).

Outcomes. The response rate for formal course evaluations increased to 70% (118/169). A 25% increase from the previous year in positive responses demonstrated improvement in student-perceived value of the course (Figure 1). As Table 1 demonstrates, mean scores for whether there was agreement between course objectives and what was actually taught and for whether examination questions adequately reflected weighting of course topics rebounded to baseline. Furthermore, significant increases from baseline were observed for course evaluation questions related to the responsiveness of the course coordinator and the helpfulness of course readings. Additional mean score increases, although non-significant, were also observed for the fairness and consistency of grading and how effectively the clinical and scientific disciplines were integrated.

Informal student feedback was markedly improved from the previous year. Students continued to express their interest in the alumni panel on the first day of the semester and how this discussion helped them gain an appreciation for the course. They also appreciated the direct applicability of readings to pharmacy practice but continued to complain about the detailed nature of quiz questions. Thirty-four percent (40/118) of students provided open-ended feedback when asked to describe what they found most beneficial about the course. Thirty-three percent (13/40) cited the instructor's lecture style as a beneficial part of the course, while 25% (10/40) listed the applicability of course content to their future practice as pharmacists. Twenty-three percent (27/118) of respondents shared what they thought was difficult about the course. The difficulty of quiz/examination questions, cited by 22% (6/27) of respondents, was the only theme to emerge. The average final grade for the course was 91% (range: 71%-99%). Sixty-nine percent of students earned a letter grade of "A," 28% "B," and 3% "C." The grade distribution and course average were nearly identical to baseline values in 2009.

Course Revision 3 (2012)

Objectives. Given the positive outcomes achieved in 2011, the primary aim established for 2012 was to maintain momentum while continuing to be innovative. Making the course "come alive" by creating a "press conference" type of atmosphere and experience for the students became integral to achieving this goal. Secondary goals included: (1) reinforcing the applicability of the course to pharmacy practice, and (2) deemphasizing rote memorization in favor of active-learning exercises.

Revisions. The alumni panel exercise implemented in 2010 and retained in 2011 served as inspiration for a more expansive panel discussion series. College of Pharmacy faculty members and others, primarily from the School of Public Health and the College of Medicine's Department of Family Medicine, were enlisted to deliver instruction and, whenever possible, to bring patients from their practice to class. Table 2 describes 4 sessions featuring panelists. Presenters were encouraged to use multimedia sources such as YouTube to enliven their sessions. Weekly reflections were retained, yet some were completed out-of-class by an assigned group of students. The 2 quizzes and the final examination were also retained but with dramatic alterations. Quizzes were transformed from multiple-choice questions based on readings into reflective writing assignments tied to specific presentation content (Appendix 1). The previous cumulative final

Table 2. Presentations Featuring Panelists from the Final Course Revision

Title of Presentation	Description of Panel
Patient Involvement in Decision-Making	Lesbian, gay, bisexual, and transgender patients
Pharmacist-Physician Interaction	A mobile health team coordinator physician who serves the homeless population, a medical center primary care physician and a pharmacist who practices in a neighborhood serving affluent and poor patients
The Experience of Chronic Illness	Two HIV/AIDS patients and 2 sickle-cell anemia patients
Medications and the Patient Experience	A patient with Parkinson's disease, a patient with chronic renal failure, and a patient with dermatomyositis since adolescence

examination was transformed into a 5-question reflective final examination designed to allow students to contemplate more deeply what they had learned throughout the semester to enhance their educational experience and, more importantly, to create something memorable they could take away from the course (Appendix 2). Individual session reflections, take-home quizzes, and the final examination were returned to the students for placement in their portfolios.

Outcomes. Fifty-two percent (102/195) of students completed the formal course evaluation. Eighteen percent reported that they "often" found the course to be valuable, while 73% reported that they "almost always" did (Figure 1). As Table 1 demonstrates, mean scores for all course evaluation questions peaked after this revision. The observed increases were all significant, with the exception of the question related to whether there was agreement between course objectives and what was actually taught. Ninety-four percent of responses to the question related to the fairness and consistency of grading were positive, while 87% of those related to the helpfulness of readings and the effectiveness of course integration were positive.

Throughout the semester, students informally and repeatedly expressed their gratitude for having "real life" patients as panelists. The once-derogatory course title "Feelings" slowly morphed into a term of endearment. Eighteen percent (35/195) of students responded to the open-ended question, "What did you find the most beneficial about this course?" Sixty percent (21/35) of these students focused on the value of the panels and how the course addressed their need to develop empathy for their patients. It also allowed students to develop personal beliefs and feelings while providing insights into topics "not scientific/about pharmacology *per se*" and not taught elsewhere in the curriculum (eg, end-of-life care, placebo response). One student observed that the course had provided students a different point of view and some things to think about with respect to caring for and working with and providing patients the best care possible. Another student shared that the course provided important aspects of communicating to patients. New positive themes also emerged, including that the take-home quiz assignments allowed more time to think about the question and situation at hand and that the course addressed issues students might not normally consider important but that would be crucial in their development as good, understanding pharmacists. The average final grade for the course was 92% (range: 90%-100%). All students earned a letter grade of "A."

DISCUSSION

Conflicting goals led to the failed first attempt to revise this course. One goal was a desire to reestablish the relevance of the course, and the other was a desire for social science to be embraced by students as seriously as other disciplines within the curriculum. Our preference for the latter was demonstrated by the introduction of 7 quizzes based on 450 pages of mostly theory-based readings. By weighting these quizzes to contribute to 50% of the students' final grades, the authors attempted to force students to take the course and social science theory in general seriously. This approach did not succeed. Instead, it fostered student resentment and worsened student perception of the course.

In response, the authors initiated an introspective, systematic analysis of events. Along with the uproar in response to a 9% drop in average grades for a course in a single year, there was evidence of success in several other revisions initiated in the first course revision (eg, alumni panel, active-learning reflections). By expanding these elements and scaling back on the unsuccessful ones, the second course revision netted impressive results. Average grades and the letter grade distribution rebounded to baseline. At the same time, the percentage of students who found the course to be often or almost always valuable increased 20% from baseline (56% in 2009, 76% in 2011), which was significant. Compared with all earlier assessments of this course, a larger number of students evaluating the second revision of the course cited it for its relevance to pharmacy practice and for its effect of broadening students' perspective of what it means to be a pharmacist.

The final course revision expanded on successful elements from the previous 2. Rather than having students attempt to study/cram for 2 in-class quizzes and a final examination, the course coordinator wanted the students to consider and reveal more about what they were learning and to describe what aspects of the course contributed most to their learning. This change allowed insights from the students about the value of the assignment from a cultural perspective (Appendix 1). Course content and required readings from the previous year were retained, but instruction was delivered by a variety of interprofessional experts and enriched by the presence of "real life" patients who shared their personal experiences, particularly regarding their interactions with pharmacists. Assessments favored reflection and attempts to develop long-term retention of information over rote memorization for traditional quizzes and examinations. Average grades increased slightly while the range and grade distribution decreased substantially. Students were receptive to changes, some were even effusively positive. Overall, most students (91%) indicated that the course was valuable, particularly with respect to its relevance to pharmacy practice.

The reliance on reflective exercises as the main source of student assessment raises many questions. The most concerning questions revolve around student accountability to course material and grade inflation. There will always be a few students who will not embrace reflective exercises meaningfully and/or seriously. They will not realize the value of "thinking" and describing a class session or experience that contributed most to their learning. This will also cause a degree of friction with students who undertake reflective assignments seriously, work diligently, and yet earn the identical grade as those who do not give the course their best effort and "cruise." A potential solution is the use of a validated grading rubric, which may better differentiate between high- and low-performing students.

Our collective assessment is that the second course revision most successfully balanced student accountability and active learning while addressing the primary goal of reestablishing the relevance of the course in the students' minds. In the first revision, the pendulum of change swung too far to the right and with the last, too far to the left. Future course offerings will use successful innovations from each revision to build upon the structure of the second. For example, we plan to reintroduce 2 reading-based quizzes and a cumulative, traditional final examination in the next course offering to address the issues of student accountability and grade inflation. The use of guest speakers (both interprofessional experts and patients) and reflective exercises (including short reflections after each session followed by class discussions based on emergent themes and 2 reflective homework assignments) are planned to maintain momentum (ie, the sense that the course "came to life") generated during the final course revision. The grade distribution will mirror the second revision; specifically, in-class reflections (30%), reading-based quizzes (25%), reflective homework assignments (20%), and a final examination (25%).

While our collaboration significantly improved this course, 2 fundamental concerns remain: (1) the imbalance in curricular emphasis between social and behavioral science courses and those of other disciplines within PharmD curricula, and (2) students' hostility toward social scientific theory. For the many reasons outlined in the introduction, and especially in an educational environment where 1 of the primary goals is to produce pharmacists capable of providing direct patient care, the lack of curricular emphasis on the social and behavioral sciences is nothing short of scandalous. The most recent Argus Commission report hopefully will encourage administrators and faculty with curricular oversight to address this imbalance.[20]

We have demonstrated that a strategic course design that helps students "connect the dots" between their basic and clinical science courses, social and behavioral science courses, and experiential coursework can temper anti-social science bias. Many, if not most, pharmacy students enter our colleges and schools having never taken a social science course and, thus, are equipped with little more than preconceived notions and prejudices that "soft science" courses are somehow less important than their "hard science" counterparts. Regrettably, the predominant PharmD curricular structure reinforces these views. In the final analysis, students are a product of the cultural milieu in which they work and learn. Responsibility for that culture and its values belongs to the pharmacists with whom the students work and faculty members at colleges and schools of pharmacy. Curricular revision that addresses the imbalance in emphasis between social and behavioral science courses and those of other disciplines within PharmD curricula would go a long way toward addressing these cultural barriers and students' misperceptions about social science.

Our hope is that this manuscript will serve as a roadmap for other pharmacy educators intending to revise their current courses and/or to introduce a social and behavioral science course within their curricula. To educate pharmacy students to succeed in direct patient care roles and take advantage of shifting pharmacy practice paradigms, especially within interprofessional teams and in the community setting, the approach to social and behavioral pharmacy instruction within PharmD curricula needs to be retooled. The authors envision social and behavioral

pharmacy courses of the future serving as a bridge between basic and clinical science courses and introductory and/or advanced pharmacy practice experiences, wherein pharmacy students learn how to transform their basic and clinical science knowledge into improved patient care outcomes. As expectations for pharmacists to deliver direct patient care grow, so too will the need for greater emphasis on social science within PharmD programs.

SUMMARY

Sequential course revisions implemented several structural changes that improved student perceptions of the main course devoted to social and behavioral pharmacy within the PharmD curriculum at the University of Illinois at Chicago College of Pharmacy. The most successful of these revolved around the concept of direct applicability. Examples of revisions that netted positive results included required readings with practical applications for pharmacy practice, use of guest speakers (often "real life" patients) and interprofessional experts as presenters, and the introduction of reflective, active-learning exercises. Several failures worthy of mention include an attempt to force students to take social scientific theory seriously by requiring them to master theory-laden primary literature and demanding more effort from them than was warranted for a 2-credit-hour course.

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Appendix 1. Reflective Take-Home Quiz Introduced in the Final Course Revision in *Lieu* of a Traditional Multiple-Choice, Reading-Based in-Class Quiz

Description	Mourning is, in the simplest sense, synonymous with grief over the death of someone. The word is also used to describe a cultural complex of behaviors in which the bereaved participate or are expected to participate. Customs vary between different cultures and evolve over time, though many core behaviors remain constant.
Instructions	Provide a typed, 1- to 2-page essay (double-spaced, 12-point font) of how your cultural/ethnic group mourns the death of a loved one. Describe (a) custom(s) that take(s) place during the mourning/grieving period, and if possible, how, historically, the custom(s) evolved over time. To help you complete this quiz, feel free to discuss this with your family members. If there is a particular event you would like to use, eg, the death of a grandparent, an uncle, a relative, a family friend, to complete this quiz, do so.

Appendix 2. Final Reflective Examination Introduced in the Final Course Revision

Instructions	Please carefully review the attached listing of presentations/sessions held this semester, along with the 2 outside-class homework assignments and the 2 take-home quizzes. Use this list as a basis to answer the following 5 questions (questions 1-4 are based on what you believed was the most beneficial presentation/session; question 5 is based on your perceptions of the homework assignments and/or the take-home quizzes)
Question 1	List the specific session/presentation. Explain why this session/presentation was most beneficial to you as a pharmacy student and as a future practicing pharmacist.
Question 2	List the key concept(s) you learned from/during this in-class presentation session and describe how this (these) concept(s) will be beneficial to you as a future practicing pharmacist.
Question 3	Explain how this session/presentation either changed your thinking and/or point of view of (a) past held belief(s) or confirmed what you had already believed.
Question 4	If this specific session/presentation could be improved in future offerings of the course, what would be (a) good approach(es) to implement to ensure its success.
Question 5	Identify one (or more) of these which were beneficial to you as a future practicing pharmacist and explain how it (they) was (were) beneficial for you as a future practicing pharmacist.